BayRS Version 13.10 Document Change Notice

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Site Manager Software Version 7.10

BCC Version 4.10

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Bay Networks *Where Information Flows.™*

Bay Networks Where Information Flows™

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Preface

This guide describes changes to router software and hardware documentation since BayRS™ Version 13.00. Table 1 of this guide lists the manuals included with Version 13.10, identifies new and revised manuals since Version 13.00, and lists those manuals that we have not revised and which are affected by sections in this document change notice.

Text Conventions

This guide uses the following text conventions:

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: If the command syntax is: **ping** <*ip_address*>, you enter: **ping 192.32.10.12**
bold text	Indicates command names and options and text that you need to enter. Example: Enter **show ip** {**alerts** | **routes**}. Example: Use the **dinfo** command.

braces ({})	Indicate required elements in syntax descriptions where there is more than one option. You must choose only one of the options. Do not type the braces when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you must enter either: **show ip alerts** or **show ip routes**, but not both.
brackets ([ ])	Indicate optional elements in syntax descriptions. Do not type the brackets when entering the command. Example: If the command syntax is: **show ip interfaces** [**-alerts**], you can enter either: **show ip interfaces** or **show ip interfaces -alerts**.
ellipsis points (. . .)	Indicate that you repeat the last element of the command as needed. Example: If the command syntax is: **ethernet/2/1** [<*parameter*> <*value*>] **. . .** , you enter **ethernet/2/1** and as many parameter-value pairs as needed.
italic text	Indicates file and directory names, new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is: **show at** <*valid_route*> *valid_route* is one variable and you substitute one value for it.
`screen text`	Indicates system output, for example, prompts and system messages. Example: `Set Bay Networks Trap Monitor Filters`

separator (>)	Shows menu paths. Example: Protocols > IP identifies the IP option on the Protocols menu.
vertical line (|)	Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you enter either: **show ip alerts** or **show ip routes**, but not both.

Acronyms

This guide uses the following acronyms:

DNS	domain name server
IP	Internet Protocol
L2TP	Layer 2 Tunneling Protocol
NSA	name server address
MRU	maximum receive unit
MTU	maximum transmission unit
OSPF	Open Shortest Path First
PPP	Point-to-Point Protocol
SNMP	Simple Network Management Protocol

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Document Change Notice

Table 1 lists the manuals included in the Version 13.10/7.10 release and those manuals affected by sections in this document.

Table 1. Version 13.10/7.10 Documentation

Document Title	Revised Book for 13.10/7.10	Affected by Section in DCN
BCC Quick Reference	✔	
Cable Guide		✔
Configuring and Managing Routers with Site Manager		✔
Configuring and Troubleshooting Bay Dial VPN Networks		
Configuring AppleTalk Services		
Configuring APPN Services		
Configuring ATM DXI Services		
Configuring ATM Half-Bridge Services		
Configuring ATM and MPLS Services	✔	
Configuring BaySecure FireWall-1	✔	
Configuring BayStack Remote Access		
Configuring Bridging Services		
Configuring BSC Transport Services		
Configuring Data Compression Services	✔	
Configuring Data Encryption Services		✔
Configuring DECnet Services		

(continued)

Table 1. Version 13.10/7.10 Documentation *(continued)*

Document Title	Revised Book for 13.10/7.10	Affected by Section in DCN
Configuring Dial Services	✔	
Configuring DLSw Services	✔	
Configuring Ethernet, FDDI, and Token Ring Services	✔	
Configuring Frame Relay Services		✔
Configuring IP Security Services	✔	
Configuring Interface and Router Redundancy		
Configuring IP Multicasting and Multimedia Services	✔	
Configuring IP Services	✔	
Configuring IP Utilities	✔	
Configuring IPv6 Services		
Configuring IPX Services		
Configuring L2TP Services		✔
Configuring LLC Services		
Configuring LNM Services		
Configuring OSI Services		
Configuring Polled AOT Transport Services		
Configuring PPP Services		✔
Configuring RADIUS		
Configuring RMON and RMON2		
Configuring SDLC Services		
Configuring SMDS		
Configuring SNMP, BootP, DHCP, and RARP Services	✔	
Configuring Traffic Filters and Protocol Prioritization		
Configuring VINES Services		
Configuring Virtual Router Redundancy Services	✔	

(continued)

Table 1. Version 13.10/7.10 Documentation *(continued)*

Document Title	Revised Book for 13.10/7.10	Affected by Section in DCN
Configuring WAN Line Services	✔	
Configuring X.25 Gateway Services		
Configuring X.25 Services		
Configuring XNS Services		
Connecting ASN Routers to a Network		
Managing Routers Using the HTTP Server	✔	
Quick-Starting Routers		
Troubleshooting Routers		
Upgrading Routers to BayRS Version 13.xx		✔
Using Technician Interface Scripts		
Using Technician Interface Software		✔
Using the Bay Command Console	✔	
Writing Technician Interface Scripts		

Configuring L2TP Services

The following sections are amendments to *Configuring L2TP Services*.

Overview of the Name Server Addresses Feature

Bay Networks® has implemented RFC 1877, “IP Control Protocol (IPCP) Name Server Addresses,” for Layer 2 Tunneling Protocol (L2TP) connections. This name server address (NSA) feature enables a remote host dialing in to a Bay Networks router acting as an L2TP network server (LNS) to obtain NSAs from either the LNS or a RADIUS server.

To use the NSA feature, users at remote sites configuring their dial-up connections in Windows® 95, Windows 98, or Windows NT® must specify that their connections will use server-assigned name server addresses, indicating that a remote server provides NSAs. Users specify this in the Dial-Up Networking TCP/IP Settings window for the connection (Figure 1).

If a user does not select the server-assigned name server addresses setting, the connection uses the NSAs that the user enters in the TCP/IP Settings window, and the connection does not use the NSA feature.

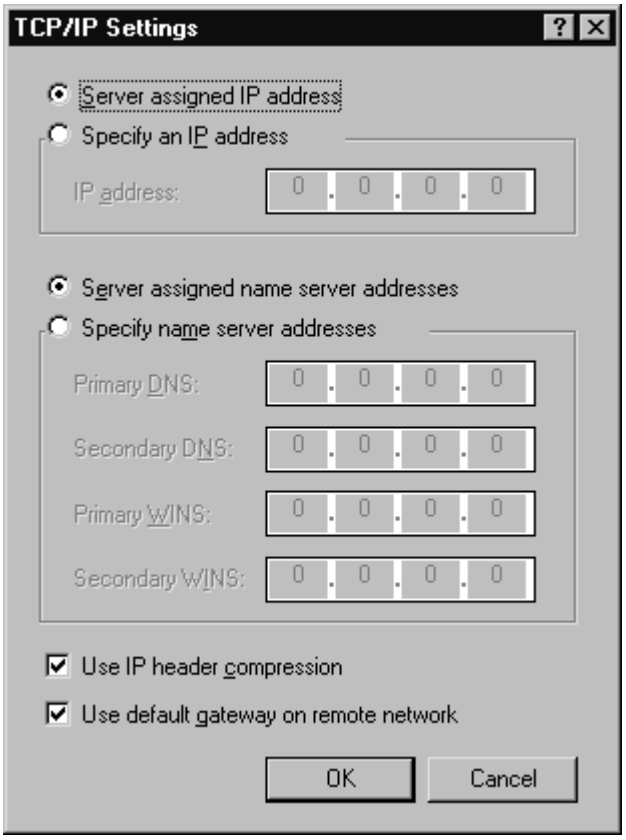


Figure 1. Specifying Server-Assigned NSAs in the Dial-Up Networking TCP/IP Settings Window

When users specify that they want to use server-assigned NSAs, they should not enter primary and secondary domain name server (DNS) and WINS name server addresses (also called *NetBIOS name server addresses* or *NBNS addresses*).

Instead, when a user dials in, the LNS or RADIUS server automatically assigns name server addresses for the connection. If a name server address changes, the network administrator can make a single modification at the LNS or RADIUS server site; every remote user is not required to go back into the TCP/IP Settings window and enter a new address.

Specifying the Origin of the Name Server Address

When you configure the NSA feature on the router, you must use Site Manager to set the Name Server Address Origin parameter to one of three values: Disable, Local, or RADIUS. The following sections describe each of these options.

Disable

If you leave the Name Server Address Origin parameter at its default of Disable, the NSA feature is disabled for the LNS configured on this router slot. When users dial in from a remote location, the connection uses DNS and NBNS (WINS) addresses that the users enter in the Dial-Up Networking TCP/IP Settings windows on their PCs.

Local

If you set the Name Server Address Origin parameter to Local, users who dial in to the LNS configured on this slot, provided that they have configured the TCP/IP settings as server-assigned name server addresses, use the DNS and NetBIOS NSAs that you set in Site Manager. You set these addresses via the Site Manager parameters Primary DNS Address, Secondary DNS Address, Primary NBNS Address, and Secondary NBNS Address.

RADIUS

If you set the Name Server Address Origin parameter to RADIUS, users who dial in to the LNS on this slot obtain NSAs from a RADIUS server, provided that they have configured their TCP/IP settings as server-assigned name server addresses.

Specifying the origin as RADIUS allows a finer distinction among users than is possible with a Local origin setting. Through the RADIUS server, you can specify that certain users use particular NSAs and other users use other NSAs, even if all users dial in through the same LNS.

To use a RADIUS server as the Name Server Address Origin, your configuration must meet the following requirements:

- You must have entered valid values for these three L2TP Site Manager parameters: RADIUS Primary Server IP Address; RADIUS Primary Server Password; and RADIUS Client IP Address.
- The RADIUS server must be operational at the location you specified.

- The RADIUS server must have entries in its database corresponding to incoming host user names.
- The RADIUS server must support vendor specific attributes (VSA) and must have the following entries in its dictionary:

```
ATTRIBUTE Annex-Primary-DNS-Server        Bay-VSA(54, ipaddr)
ATTRIBUTE Annex-Secondary-DNS-Server      Bay-VSA(55, ipaddr)
ATTRIBUTE Annex-Primary-NBNS-Server       Bay-VSA(56, ipaddr)
ATTRIBUTE Annex-Secondary-NBNS-Server     Bay-VSA(57, ipaddr)
```

Examples

Name Server Address Origin Parameter Set to Local

Figure 2 shows a network with the following configuration:

- Users at remote hosts A, B, and C have specified “Server assigned name server addresses” in the Dial-Up Networking TCP/IP Settings window on their PCs.
- The Name Server Address Origin parameter is set to Local in Site Manager on the LNS at the corporate site.
- The other Site Manager parameters related to this NSA feature on the LNS (Primary DNS Address, Secondary DNS Address, Primary NBNS Address, and Secondary NBNS Address) are set to the addresses of name servers on the corporate network (DNS1, DNS2, NBNS1, and NBNS2).

When users at remote hosts A, B, and C make dial-up connections to the corporate network, those connections use DNS1, DNS2, NBNS1, and NBNS2 as primary and secondary name servers.

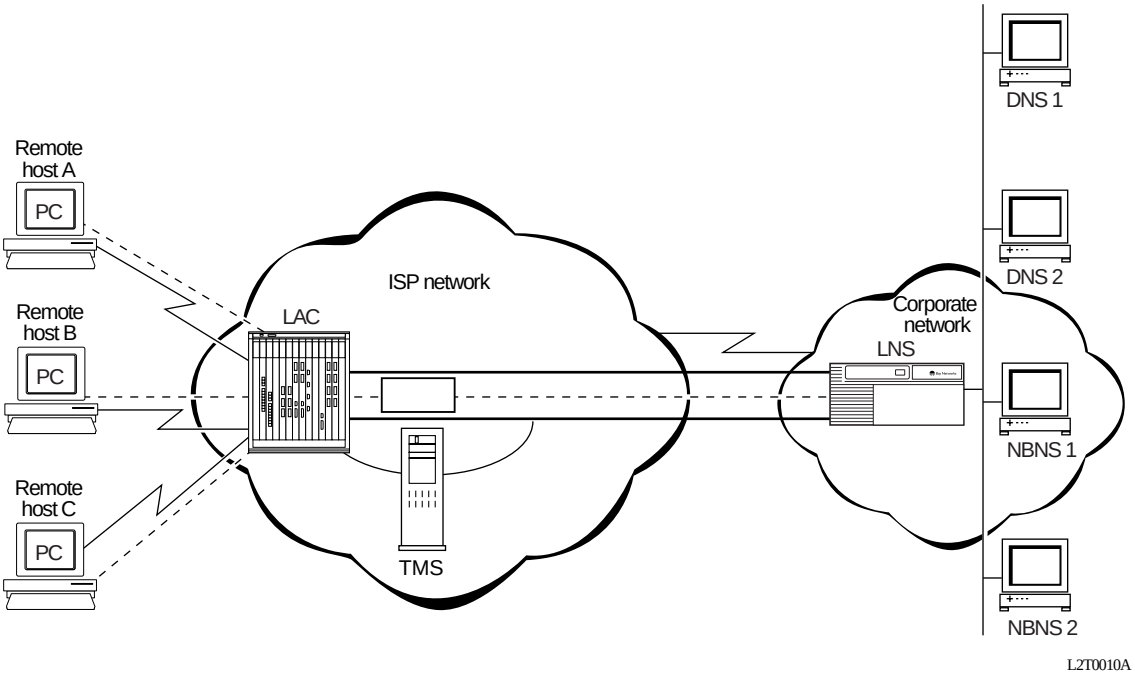


Figure 2. Network with Name Server Address Origin Parameter Set to Local

Name Server Address Origin Parameter Set to RADIUS

Figure 3 shows a network with the following configuration:

- Users at remote hosts Eng. host A, Eng. host B, Fin. host C, and Fin. host D have specified “Server assigned name server addresses” in the Dial-Up Networking TCP/IP Settings window on their PCs.
- The Name Server Address Origin parameter is set to RADIUS in Site Manager on the LNS at the corporate site.
- The RADIUS server on the corporate network specifies that users dialing in from remote hosts in Engineering should use Eng. DNS1, Eng. DNS2, Eng. NBNS1, and Eng. NBNS2 as their primary and secondary name servers.
- The RADIUS server on the corporate network specifies that users dialing in from remote hosts in Finance should use Fin. DNS1, Fin. DNS2, Fin. NBNS1, and Fin. NBNS2 as their primary and secondary name servers.

When users at remote hosts Eng. host A and Eng. host B make dial-up connections to the corporate network, those connections use Eng. DNS1, Eng. DNS2, Eng. NBNS1, and Eng. NBNS2 as primary and secondary name servers.

When users at remote hosts Fin. host A and Fin. host B make dial-up connections to the corporate network, those connections use Fin. DNS1, Fin. DNS2, Fin. NBNS1, and Fin. NBNS2 as primary and secondary name servers.

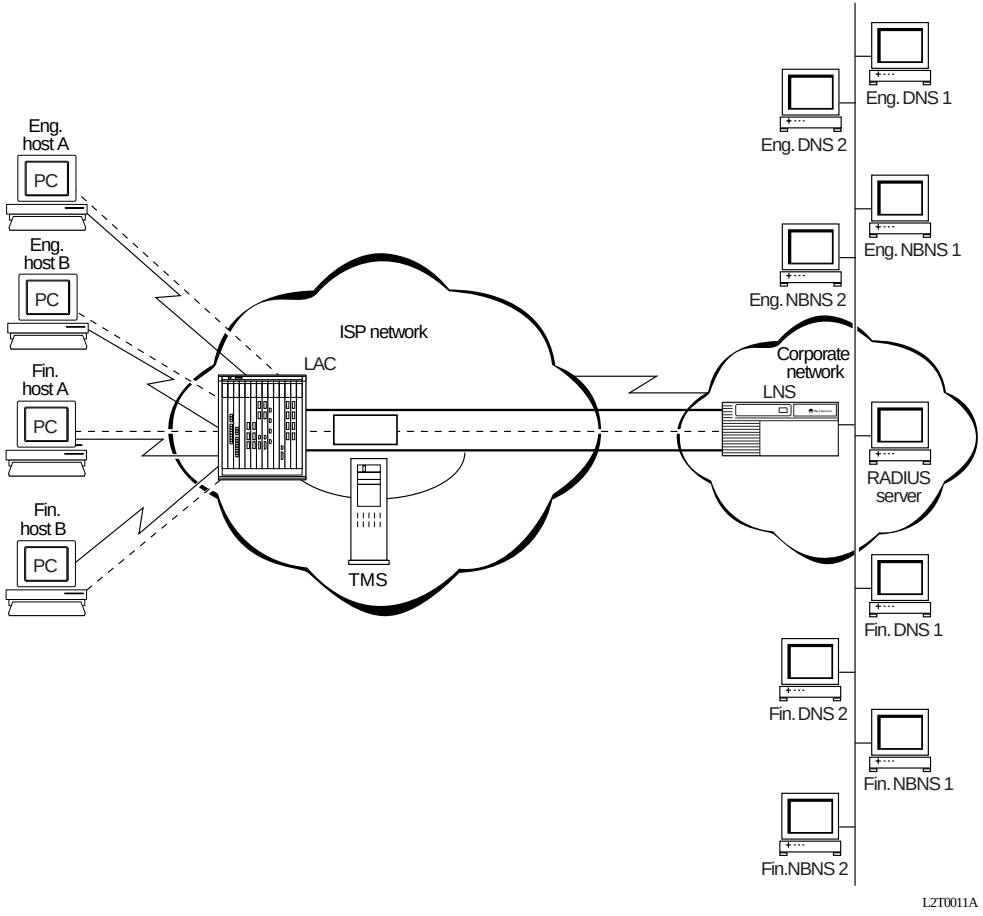


Figure 3. Network with Name Server Address Origin Parameter Set to RADIUS

Configuring the NSA Feature for L2TP

To configure the NSA feature for L2TP, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **IP**.	The IP menu opens.
3. Choose **L2TP**.	The L2TP menu opens.
4. Choose **L2TP Configuration**.	The L2TP Configuration List window opens.
5. Set the **Name Server Address Origin** parameter. If you set this parameter to Local, you must also set the following parameters: • **Primary DNS Address** • **Secondary DNS Address** • **Primary NBNS Address** • **Secondary NBNS Address** If you set this parameter to Radius, you must also set the following parameters: • **RADIUS Primary Server IP Address** • **RADIUS Primary Server Password** • **RADIUS Client IP Address** Click on **Help** or see the parameter descriptions beginning on page -14.	
6. Click on **Done**.	You return to the Configuration Manager window.

Checking NSA Assignments

To see which NSAs the LNS or RADIUS server assigned to a particular user, complete the following steps at the remote user's PC:

1. **Choose Start > Run.**

   The Run window opens (Figure 4).

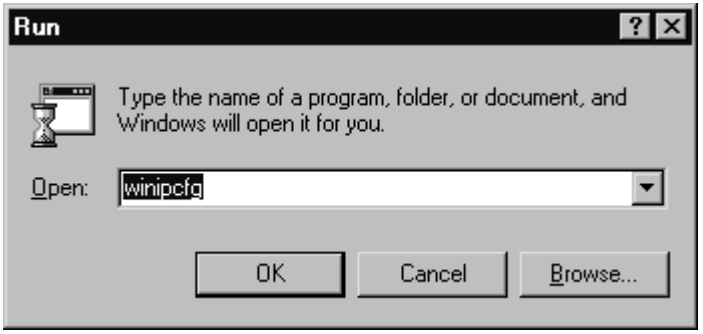


Figure 4. Run Window

2. **At the `Open:` prompt, enter:**

   winipcfg

   The IP Configuration window opens (Figure 5).

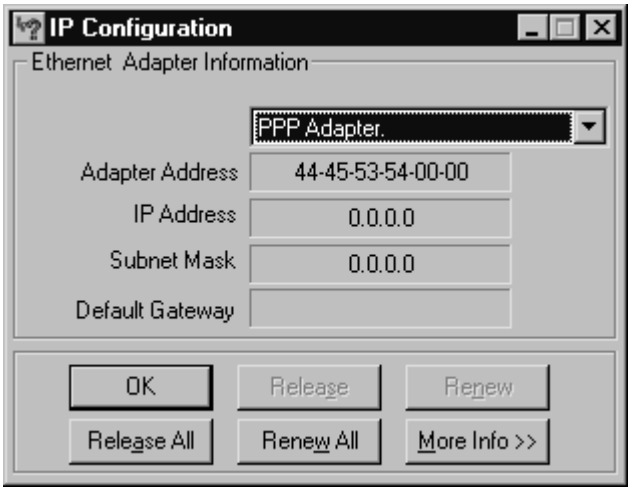


Figure 5. IP Configuration Window

3. Click on More Info.

The More Info. IP Configuration window opens (Figure 6). The DNS Servers field lists the primary and secondary DNS server addresses assigned by the server. (Click on the . . . button to see the secondary server address.) The Primary WINS Server and Secondary WINS Server fields list the primary and secondary NBNS addresses, if any.

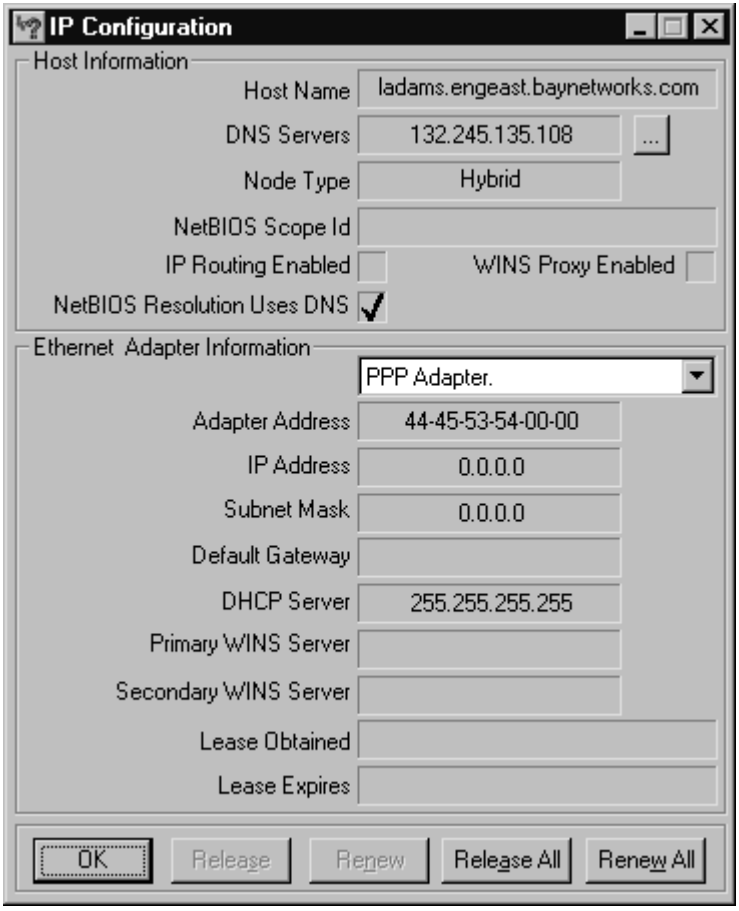


Figure 6. More Info. IP Configuration Window

Name Server Addresses Parameter Descriptions

This section includes descriptions of the Site Manager parameters related to the NSA feature. This is the same information available by clicking on the Help button.

Parameter: Name Server Address Origin

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration

Default: Disable

Options: Disable │ Local │ RADIUS

Function: Specifies whether or not the NSA feature is enabled and, if enabled, specifies the source of the domain name server (DNS) and NetBIOS name server (NBNS) addresses.

Instructions: Set to Disable if you do not want to use the NSA feature. If this feature is disabled, remote hosts use the DNS and NBNS addresses configured on their individual dial-up connections. Set to Local if you want all remote hosts to use the DNS and NBNS addresses that you configure in Site Manager. Set to RADIUS if you want remote hosts to obtain DNS and NBNS addresses from a RADIUS server.

MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.23

Parameter: Primary DNS Address

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration

Default: None

Options: Any valid IP address

Function: If the Name Server Address Origin parameter is set to Local, the Primary DNS Address parameter specifies the address of the primary domain name server (DNS) that every remote host should use.

Instructions: Enter the IP address of the primary DNS.

MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.24

Parameter: Secondary DNS Address

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration
Default: None
Options: Any valid IP address
Function: If the Name Server Address Origin parameter is set to Local, the Secondary DNS Address parameter specifies the address of the secondary domain name server (DNS) that every remote host should use. The system uses this secondary DNS if it cannot reach the primary DNS.
Instructions: Enter the IP address of the secondary DNS.
MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.25

Parameter: Primary NBNS Address

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration
Default: None
Options: Any valid IP address
Function: If the Name Server Address Origin parameter is set to Local, the Primary NBNS Address parameter specifies the address of the primary NetBIOS name server (NBNS) that every remote host should use.
Instructions: Enter the IP address of the primary NBNS.
MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.26

Parameter: Secondary NBNS Address

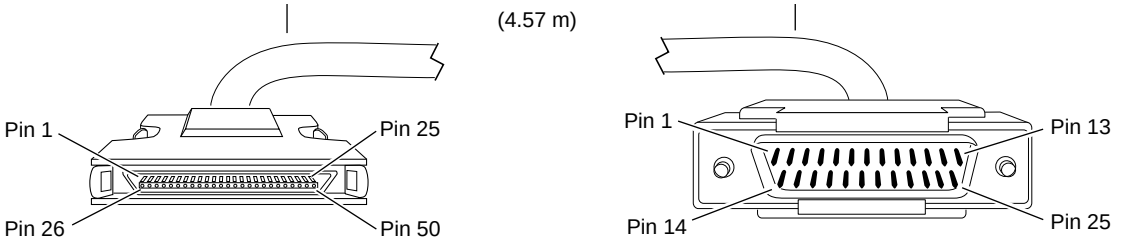
Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration
Default: None
Options: Any valid IP address
Function: If the Name Server Address Origin parameter is set to Local, the Secondary NBNS Address parameter specifies the address of the secondary NetBIOS name server (NBNS) that every remote host should use. The system uses this secondary NBNS if it cannot reach the primary NBNS.
Instructions: Enter the IP address of the secondary NBNS.
MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.27

Cable Guide

The following sections are amendments to the *Cable Guide*:

- 50-Pin to V.28 Cable (Order No. AA0018023)
- 15-Pin D-Sub to RS-232: Raise DTR (Order No. 7118)
- 15-Pin D-Sub to RS-232: V.25bis (Order No. 7119)
- 15-Pin D-Sub to V.35: V.25bis (Order No. 7120)
- 15-Pin D-Sub to V.35: Raise DTR (Order No. 7121)
- 44-Pin D-Sub to V.35: Raise DTR (Order No. 7137)
- 44-Pin D-Sub to RS-232: Raise DTR (Order No. 7138)
- 44-Pin to V.35M (Order No. 7159)
- RS-232 Pass-Through: 15-Pin to RS-232 (Order No. 7218)
- 44-Pin D-Sub to V.35: Leased Line or V.25bis (Order No. 7220)
- 15-Pin D-Sub to RS-232 (Order No. 7255)
- 15-Pin D-Sub to V.28 (Order No. 7256)
- 44-Pin D-Sub to RS-232: Leased Line or V.25bis (Order No. 7826)
- RS-232 Pass-Through: 44-Pin to RS-232 (Order No. 7833)
- V.35 Pass-Through: 44-Pin to V.35 (Order No. 7834)
- 44-Pin D-Sub to V.28 (Order No. 7837)
- 50-Pin to V.35 (Order No. 7932)
- 50-Pin to V.35: Raise DTR (Order No. 7933)
- 50-Pin to RS-232 (Order No. 7934)
- 50-Pin to RS-232: Raise DTR (Order No. 7935)
- 15-Pin to F RS-232 Synchronous Pass-Through (Order No. 7941)
- 44-Pin to F RS-232 Synchronous Pass-Through (Order No. 7943)
- 44-Pin to F V.35 Synchronous Pass-Through (Order No. 7944)
- 50-Pin to F RS-232 Synchronous Pass-Through (Order No. 7945)
- 50-Pin to F V.35 Synchronous Pass-Through (Order No. 7946)

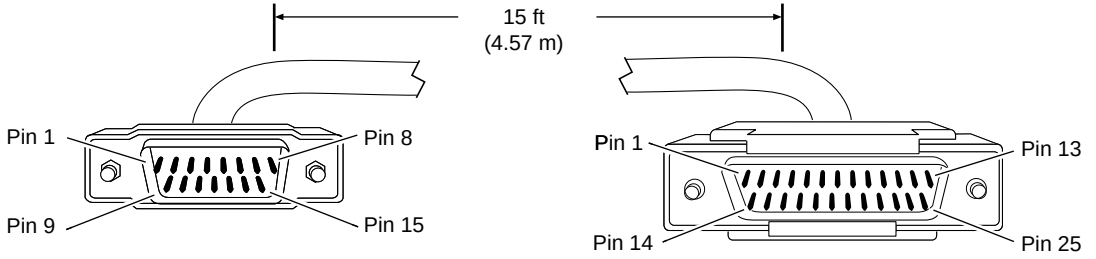
50-Pin to V.28 Cable (Order No. AA0018023)



Industry Interface Type: V.28 (V.10)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 13 > 38			
Pin 14 > 39			

15-Pin D-Sub to RS-232: Raise DTR (Order No. 7118)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

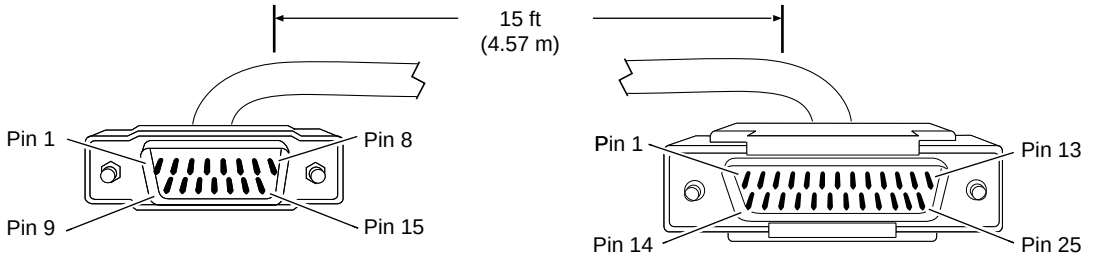
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0005A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	6	Data Set Ready
Data Carrier Detect	10	22	Ring Indicator
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 20 (Data Terminal Ready)	

15-Pin D-Sub to RS-232: V.25bis (Order No. 7119)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

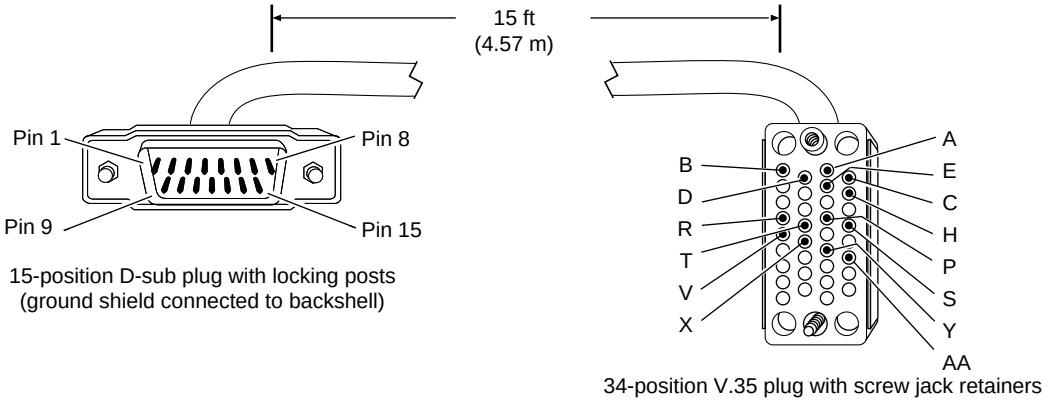
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0006A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Data Carrier Detect	10	6	Data Set Ready
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 20 (Data Terminal Ready)	

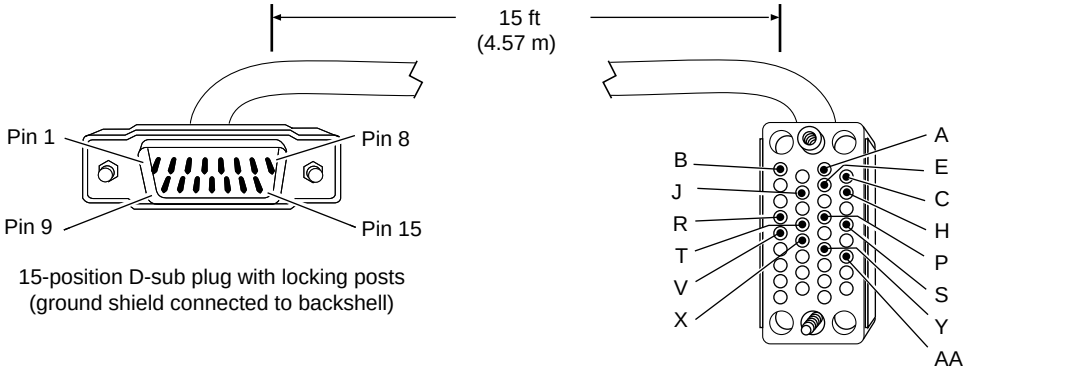
15-Pin D-Sub to V.35: V.25bis (Order No. 7120)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data A
Send Data -	3	S	Send Data B
Serial Clock Transmit +	4	Y	Send Timing A
Serial Clock Transmit -	5	AA	Send Timing B
Request to Send +	6	C	Request to Send
Clear to Send +	8	D	Clear to Send
Data Carrier Detect +	10	E	Data Set Ready
Serial Clock Receive -	11	X	Receive Timing B
Serial Clock Receive +	12	V	Receive Timing A
Receive Data -	13	T	Receive Data B
Receive Data +	14	R	Receive Data A
Internal Wire Connections			
Pin 1 > 7		Pin C > H (Data Terminal Ready)	

15-Pin D-Sub to V.35: Raise DTR (Order No. 7121)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

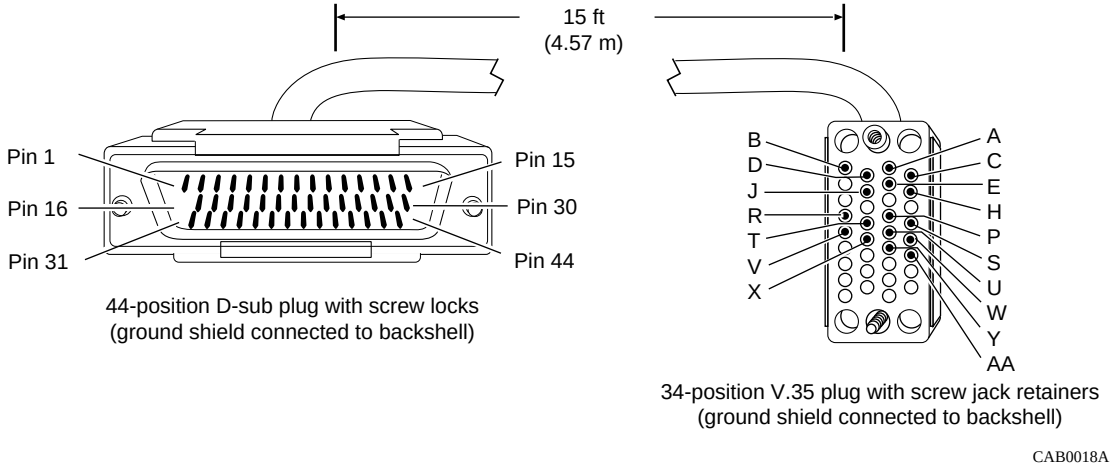
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0008A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data A
Send Data -	3	S	Send Data B
Serial Clock Transmit +	4	Y	Send Timing A
Serial Clock Transmit -	5	AA	Send Timing B
Request to Send +	6	C	Request to Send
Clear to Send +	8	E	Data Set Ready
Data Carrier Detect +	10	J	Ring Indicator
Serial Clock Receive -	11	X	Receive Timing B
Serial Clock Receive +	12	V	Receive Timing A
Receive Data -	13	T	Receive Data B
Receive Data +	14	R	Receive Data A
Internal Wire Connections			
Pin 1 > 7		Pin C > H (Data Terminal Ready)	

44-Pin D-Sub to V.35: Raise DTR (Order No. 7137)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

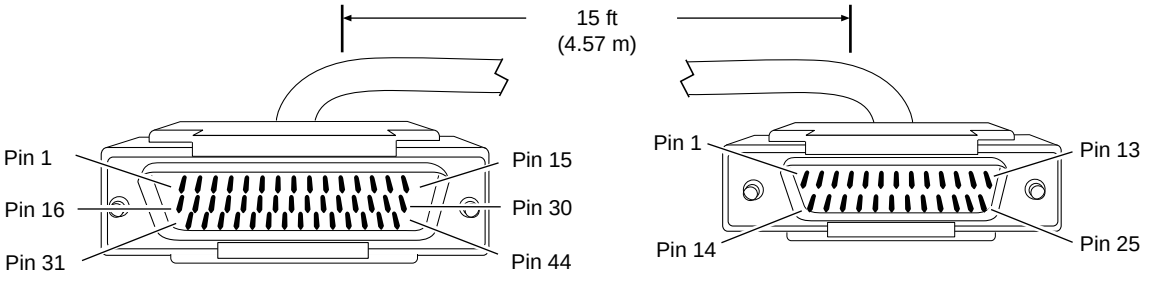
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0018A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	A	Frame Ground
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Data Carrier Detect +	9	J	Ring Indicator
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Signal Ground	19	B	Signal Ground
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

44-Pin D-Sub to RS-232: Raise DTR (Order No. 7138)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

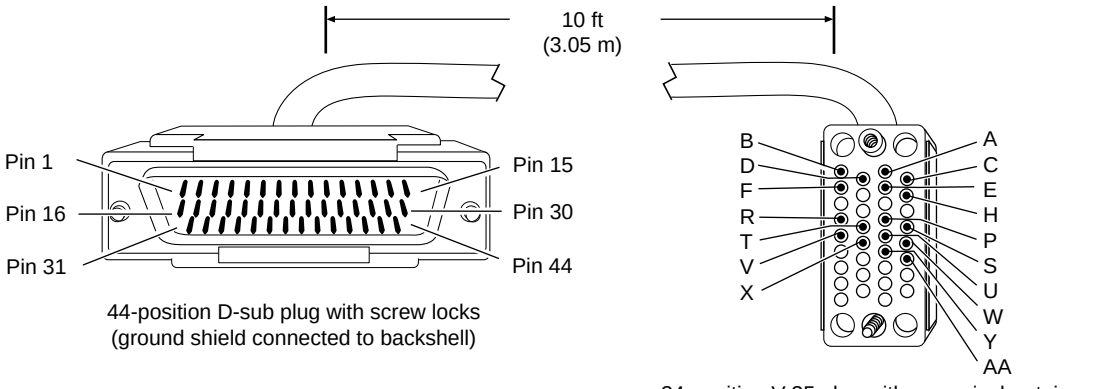
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0019A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	22	Ring Indicator
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 13 > 28			
Pin 14 > 29			

44-Pin to V.35M (Order No. 7159)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

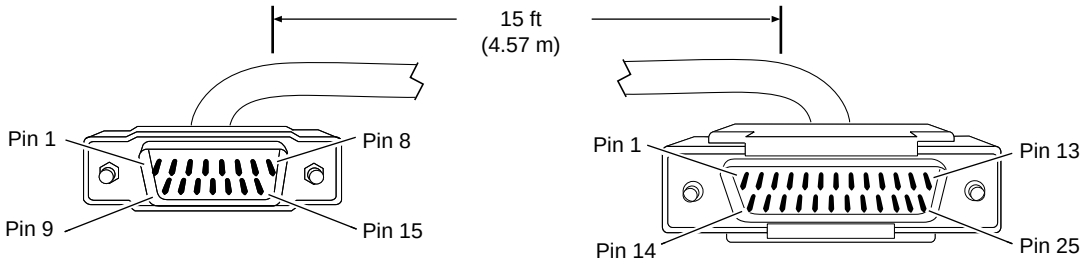
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0031B

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	A	Frame Ground
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Data Carrier Detect +	9	F	Data Carrier Detect
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Signal Ground	19	B	Signal Ground
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

RS-232 Pass-Through: 15-Pin to RS-232 (Order No. 7218)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

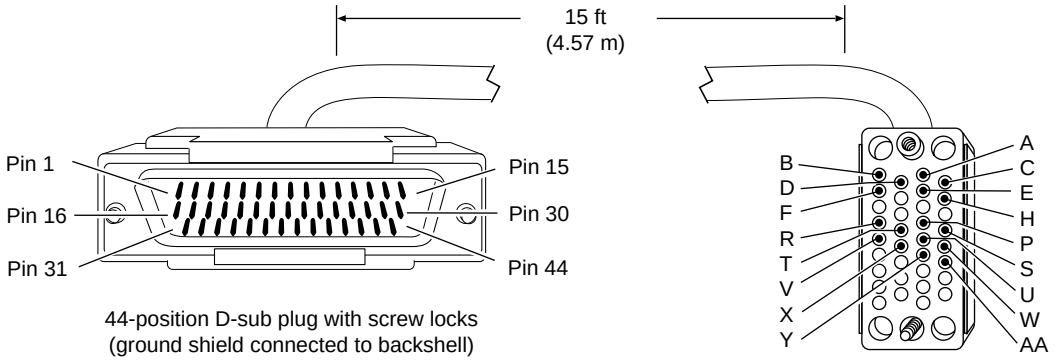
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0041A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	3	Received Data
Transmit Clock	4	15	Transmit Clock
Data Set Ready	6	8	Data Carrier Detect
Data Carrier Detect	10	4	Clear to Send
Receive Clock	12	17	Receive Clock
Received Data	14	2	Transmitted Data
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 5	
Pin 6 > 8		Pin 6 > 20	
Pin 3 > 4 >12			

44-Pin D-Sub to V.35: Leased Line or V.25bis (Order No. 7220)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

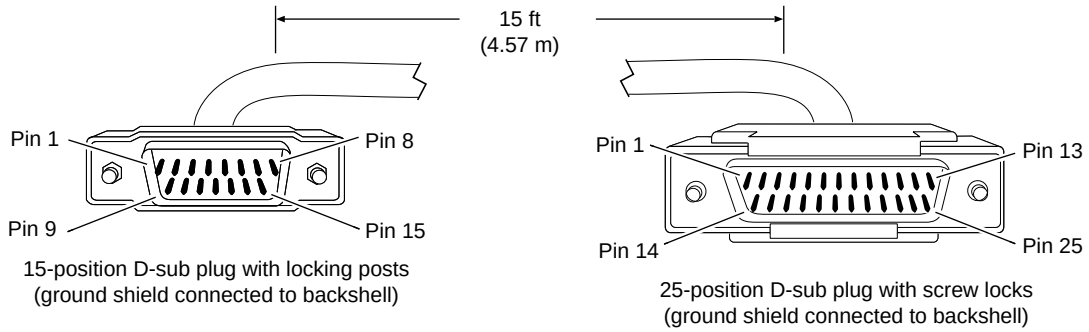
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0106A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect +	9	F	Data Carrier Detect
Signal Ground	19	B	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

15-Pin D-Sub to RS-232 (Order No. 7255)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

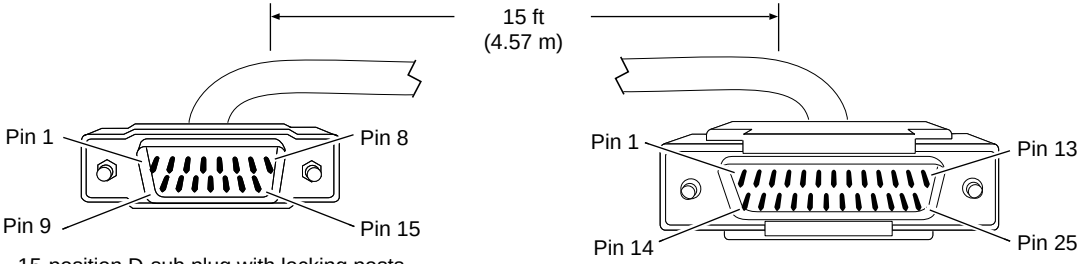
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0045A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Carrier Detect	10	8	Carrier Detect
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Data Set Ready	15	6	Data Set Ready
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 20	

15-Pin D-Sub to V.28 (Order No. 7256)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

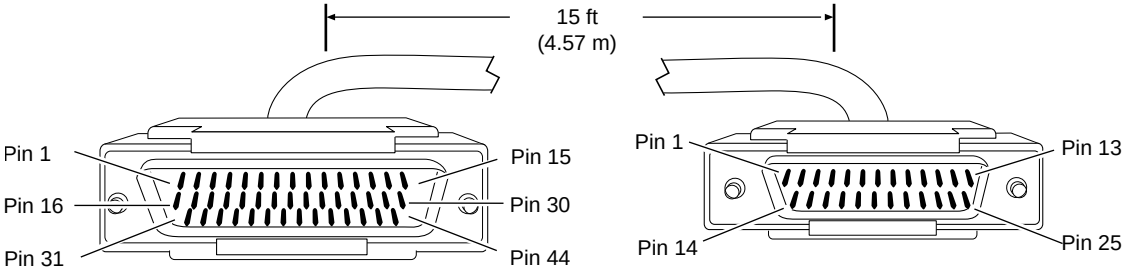
25-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

CAB0045B

Industry Interface Type: V.28 (V.10)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Carrier Detect	10	8	Carrier Detect
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Data Set Ready	15	6	Data Set Ready
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 20	

44-Pin D-Sub to RS-232: Leased Line or V.25bis (Order No. 7826)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

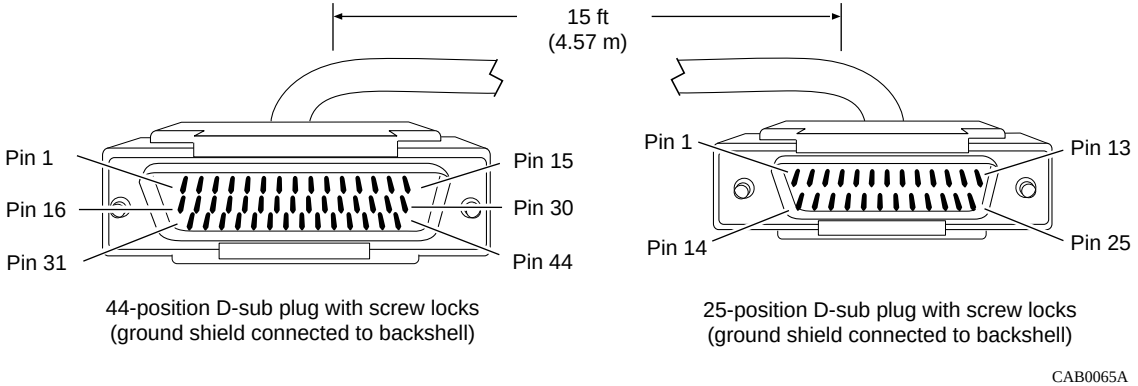
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0069A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**
Signal	**Pin # to Pin #**	**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections		
Pin 7 > 19 > 20		
Pin 13 > 28		
Pin 14 > 29		

RS-232 Pass-Through: 44-Pin to RS-232 (Order No. 7833)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

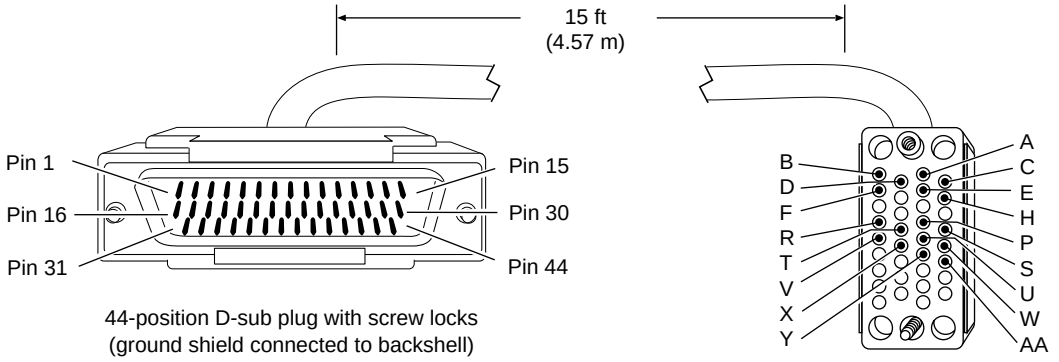
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0065A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Receive Data +	3	2	Send Data
Send Data +	2	3	Receive Data
Data Carrier Detect +	9	5	Clear to Send
RTS +	4	8	Data Carrier Detect
Send Timing +	10	17	Receive Timing
Frame Ground	1	1	Frame Ground
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin 4 > 5	
Pin 10 > 11 > 12		Pin 15 > 17	
Pin 7 > 19 > 20		Pin 6 > 20	
Pin 13 > 28			
Pin 14 > 29			

V.35 Pass-Through: 44-Pin to V.35 (Order No. 7834)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

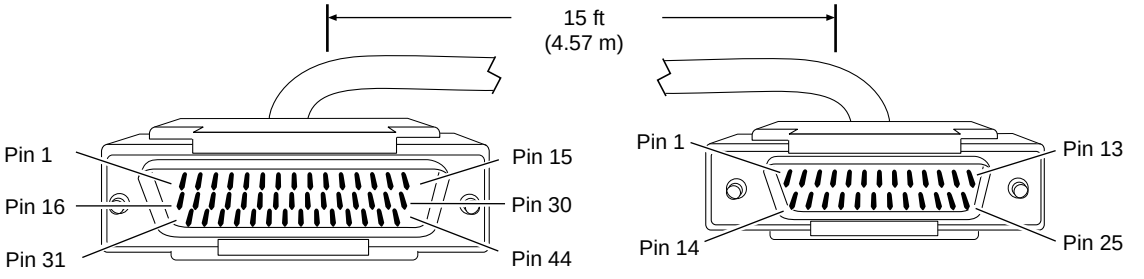
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0106A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	R	Receive Data A
VSD -	36	T	Receive Data B
VRD +	37	P	Send Data A
VRD -	35	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	D	Clear to Send
VTT +	40	V	Receive Timing A
VTT -	39	X	Receive Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 32 > 34 > 40		Pin V > Y	
Pin 31 > 33 > 39		Pin X > AA	
Pin 7 > 19 > 20 > 41 > 42		Pin E > H	
Pin 13 > 28			
Pin 14 > 29			

44-Pin D-Sub to V.28 (Order No. 7837)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

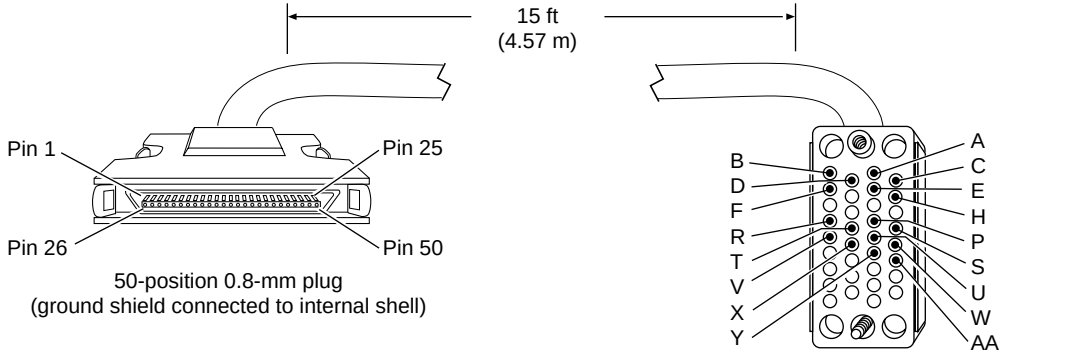
25-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

CAB0069B

Industry Interface Type: V.28 (V.10)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 13 > 28			
Pin 14 > 29			

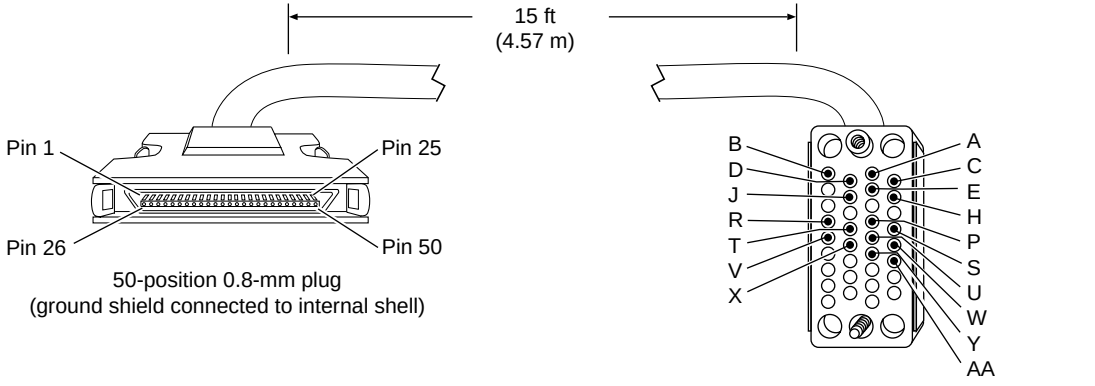
50-Pin to V.35 (Order No. 7932)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	P	Send Data A
VSD -	19	S	Send Data B
VRT +	42	V	Receive Timing A
VRT -	17	X	Receive Timing B
VST +	41	Y	Send Timing A
VST -	16	AA	Send Timing B
VRD +	43	R	Receive Data A
VRD -	18	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	45	U	Terminal Timing A
VTT -	20	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect	9	F	Data Carrier Detect
Signal Ground	30	B	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 46 > 47 > 48			
Pin 13 > 38			
Pin 14 > 39			

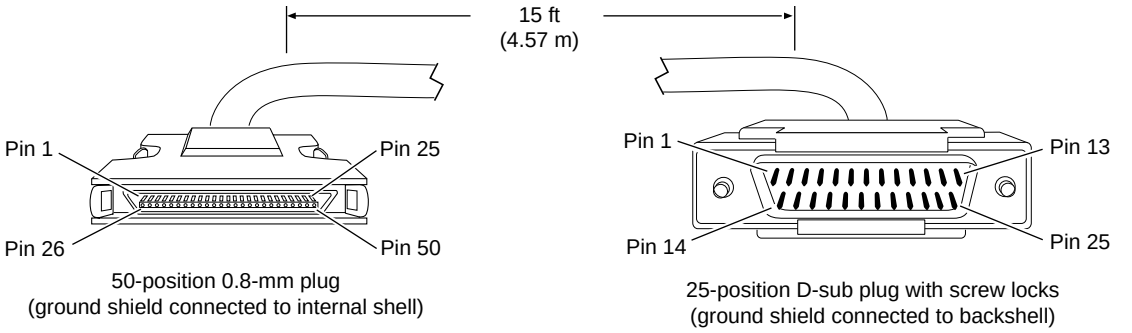
50-Pin to V.35: Raise DTR (Order No. 7933)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	P	Send Data A
VSD -	19	S	Send Data B
VRT +	42	V	Receive Timing A
VRT -	17	X	Receive Timing B
VST +	41	Y	Send Timing A
VST -	16	AA	Send Timing B
VRD +	43	R	Receive Data A
VRD -	18	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	45	U	Terminal Timing A
VTT -	20	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect +	9	J	Ring Indicator
Signal Ground	30	B	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 46 > 47 > 48			
Pin 13 > 38			
Pin 14 > 39			

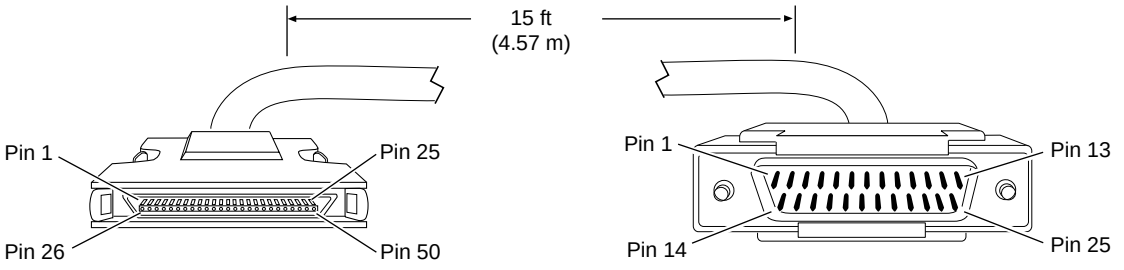
50-Pin to RS-232 (Order No. 7934)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 13 > 38			
Pin 14 > 39			

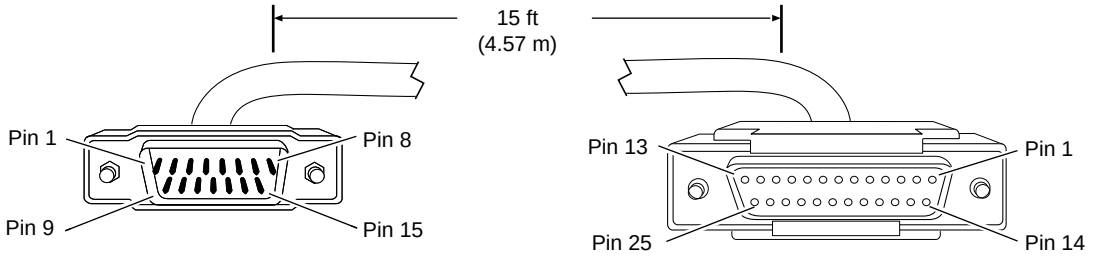
50-Pin to RS-232: Raise DTR (Order No. 7935)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	22	Ring Indicator
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 13 > 38			
Pin 14 > 39			

15-Pin to F RS-232 Synchronous Pass-Through (Order No. 7941)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

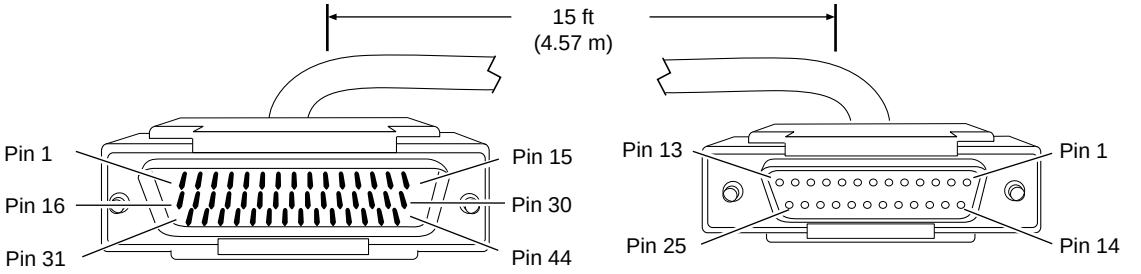
25-position D-sub receptacle with screw locks
(ground shield connected to backshell)

CAB0079A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Data	2	3	Receive Data
Receive Data	14	2	Transmit Data
Request to Send	6	8	Data Carrier Detect
Data Carrier Detect	10	4	Request to Send
Transmit Clock	4	15	Transmit Clock
Signal Ground	1	7	Signal Ground
Internal Wire Connections			
Pin 6 > 8		Pin 4 > 5	
Pin 3 > 4 > 12		Pin 15 > 17	
Pin 1 > 7		Pin 6 > 20	

44-Pin to F RS-232 Synchronous Pass-Through (Order No. 7943)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

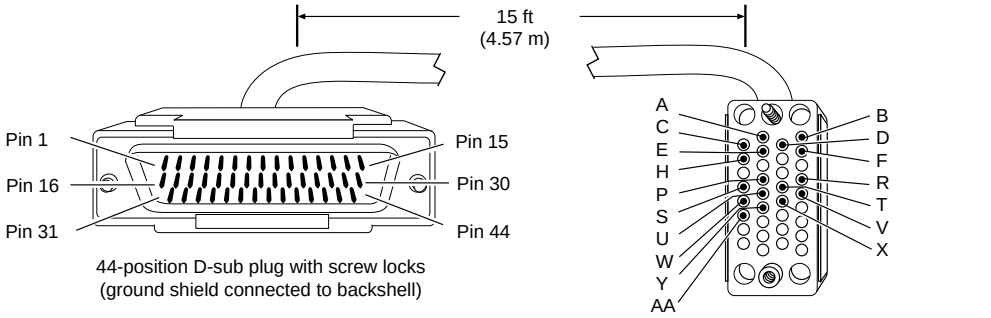
25-position D-sub receptacle with screw locks
(ground shield connected to backshell)

CAB0081A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	3	Receive Data
Receive Data +	3	2	Send Data
Request to Send +	4	8	Data Carrier Detect
Data Carrier Detect +	9	4	Request to Send
Send Timing +	10	15	Send Timing
Frame Ground	1	1	Frame Ground
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin 4 > 5	
Pin 10 > 11 > 12		Pin 15 > 17	
Pin 13 > 28		Pin 6 > 20	
Pin 14 > 29			
Pin 7 > 19 > 20			

44-Pin to F V.35 Synchronous Pass-Through (Order No. 7944)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

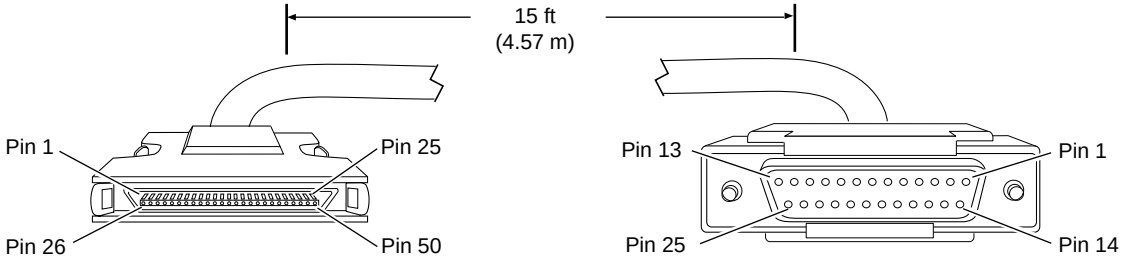
34-position V.35 receptacle with screw jack retainers
(ground shield connected to backshell)

CAB0082A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	R	Receive Data A
VSD -	36	T	Receive Data B
VRD +	37	P	Send Data A
VRD -	35	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	C	Request to Send
VTT +	40	Y	Send Timing A
VTT -	39	AA	Send Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 32 > 34 > 40		Pin V > Y	
Pin 31 > 33 > 39		Pin X > AA	
Pin 13 > 28		Pin E > H	
Pin 14 > 29			
Pin 7 > 19 > 20 > 41 > 42			

50-Pin to F RS-232 Synchronous Pass-Through (Order No. 7945)



50-position 0.8-mm plug
(ground shield connected to internal shell)

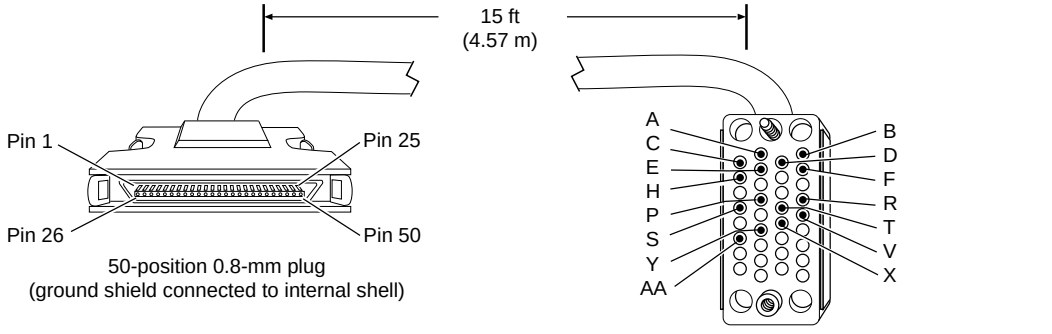
25-position D-sub receptacle with screw locks
(ground shield connected to backshell)

CAB0083A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	3	Receive Data
Receive Data +	3	2	Send Data
Request to Send +	4	8	Data Carrier Detect
Data Carrier Detect +	9	4	Request to Send
Send Timing +	10	15	Send Timing
Frame Ground	1	1	Frame Ground
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin 4 > 5	
Pin 10 > 11 > 12		Pin 15 > 17	
Pin 13 > 38		Pin 6 > 20	
Pin 14 > 39			
Pin 7 > 30 > 31			

50-Pin to F V.35 Synchronous Pass-Through (Order No. 7946)



50-position 0.8-mm plug
(ground shield connected to internal shell)

34-position V.35 receptacle with screw jack retainers
(ground shield connected to backshell)

CAB0084A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	R	Receive Data A
VSD -	19	T	Receive Data B
VRD +	43	P	Send Data A
VRD -	18	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	D	Clear to Send
VTT +	45	Y	Send Timing A
VTT -	20	AA	Send Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 41 > 42 > 45		Pin V > Y	
Pin 16 > 17 > 20		Pin X > AA	
Pin 13 > 38		Pin E > H	
Pin 14 > 39			
Pin 7 > 30 > 31 > 46 > 47			

Configuring PPP Services

The following sections are amendments to *Configuring PPP Services.*

Replace the existing sections “Setting the Maximum Receive Unit (MRU)” and “Enabling RFC 1661 Compliance for Dial Circuits” with the sections that follow. Note that all the upgrade options listed in “Setting the Maximum Receive Unit (MRU)” are no longer valid.

Setting the Maximum Receive Unit (MRU)

The Maximum Receive Unit (MRU) Size parameter specifies the maximum receive unit size, in bytes, for the line. The default MRU size for leased lines is 1590 bytes. The default MRU size for dial lines is 1500 bytes.

For leased lines, the router negotiates the MRU size automatically, so you do not have to configure a value manually. However, to ensure that the router can negotiate the MRU size successfully, you must disable the RFC1661 Compliance parameter. This parameter is enabled by default to ensure the correct MRU size for dial lines.

For instructions on disabling RFC 1661 compliance, see “Disabling RFC 1661 Compliance.”

Using the BCC

The MRU size and RFC 1661 compliance are included in the **dial** object for PPP dial interfaces. For instructions on setting the **mru** parameter and **mru-compliance** parameter, see *Configuring Dial Services*.

Using Site Manager

For leased lines, MRU is negotiated automatically, so there is no need to manually set this parameter. To set the MRU for dial lines, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
1. Choose **PPP**.	The PPP menu opens.
2. Choose **Interfaces.**	The PPP Interface List window opens.
3. Click on **Lines**.	The PPP Line List window opens.
4. Set the **MRU Size (bytes**) parameter. Click on **Help** or see the parameter descriptions beginning on page -53.	
5. Click on **Done**.	You return to the PPP Interface List window.
6. Click on **Done**.	You return to the Configuration Manager window.

Disabling RFC 1661 Compliance

RFC 1661 compliance is enabled by default for dial lines. For leased lines, you must disable compliance so that the MRU size can be negotiated correctly.

To disable RFC 1661 compliance, complete the following tasks:

Site Manager Path	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols.**	The Protocols menu opens.
2. Choose **PPP.**	The PPP menu opens.
3. Choose **Interfaces**.	The PPP Interface List window opens.
4. Click on **Lines**.	The PPP Line List window opens.
5. Set the **RFC1661 Compliance** parameter. Click on **Help** or see the parameter descriptions beginning on page -53.	
6. Click on **Done**.	You return to the PPP Interface List window.
7. Click on **Done**.	You return to the Configuration Manager window.

PPP Line Parameters

Replace the existing descriptions for MRU Size and RFC1661 Compliance with the parameter descriptions that follow.

Parameter:	MRU Size (bytes)
Path:	Protocols > PPP > Interfaces > **Lines**
Default:	1590 (leased lines) | 1500 (dial lines)
Options:	1 to 4600
Function:	Sets the maximum receive unit (MRU) size, in bytes, for the line.
Instructions:	The router determines the MRU size based on the value of the RFC1661 Compliance parameter and whether the connection is a leased line or a dial line. For leased lines, set the RFC1661 Compliance parameter to Disable. The router will then negotiate the MRU size automatically; there is no need to manually configure the MRU size. For dial lines, accept the default value for the RFC1661 Compliance parameter (Enable). With RFC1661 Compliance enabled, you can manually configure the MRU size. In most cases, you should accept the default value, 1500 bytes. However, if you configure an MRU size other than the default, be aware that the router can negotiate only for an MRU value that is larger than its configured value. The range that it can negotiate is between the configured MTU size and the router driver MTU value, minus the PPP header and CRC size. For example, if the configured MTU is 1500 and the driver MTU is 1600, the negotiation range is 1500 to 1590 (1600 - 8 - 2 = 1590). We recommend that the peer be configured for an MRU value of at least 1500 bytes. Note also that the router and its peer do not have to use the same MRU value to communicate with one another.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.2.1.1.48

Parameter:	RFC1661 Compliance
Path:	Protocols > PPP > Interfaces > **Lines**
Default:	Enable
Options:	Enable | Disable
Function:	Enables RFC 1661 compliance for a PPP dial circuit. RFC 1661 defines the standards for PPP operation.
Instructions:	Accept the default, Enable, to make the PPP dial circuit RFC 1661-compliant. For PPP leased lines, select Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.2.1.1.49

Configuring Data Encryption Services

The following sections are amendments to *Configuring Data Encryption Services*.

Replace the existing section, “Configuring Encryption with Dial Backup” with the following section, “Using Encryption with Dial Services.”

Using Encryption with Dial Services

You can configure WEP to work with dial-on-demand, dial backup, and bandwidth-on-demand services. Using WEP for these three dial services enables you to protect sensitive traffic across switched circuits.

Configure encryption for a PPP or frame relay switched circuit as you would for a leased circuit.

Encryption with Dial Backup

If you configure encryption to work with dial backup service, encrypted data travels over the backup circuit if the primary line fails. You do not have to configure WEP over the backup circuit, because the backup circuit takes the configuration of the primary circuit. Encryption works with any PPP or frame relay primary and backup circuit combination.

If PPP is the protocol for the backup circuit, ensure that the parameter RFC1661 Compliance (Site Manager) or **mru-compliance** (BCC) is set to the default, Enable, for encryption to work successfully.

To configure RFC 1661 compliance with Site Manager, see *Configuring PPP Services*. To configure RFC 1661 compliance with the BCC, see *Configuring Dial Services*.

Configuring Frame Relay Services

The following section is an amendment to *Configuring Frame Relay Services*.

Calculating the MTU Size for Frame Relay Connections

If your Bay Networks router communicates across a frame relay line, you need to make an adjustment when you configure the maximum transmission unit (MTU). You set the MTU value by configuring the MTU parameter.

When you enter a value for the MTU parameter, the router automatically reduces this value to account for WAN Encryption Protocol (WEP) and WAN Compression Protocol (WCP) header sizes. Consequently, the amount of data that the router sends across the frame relay line is less than you configured. For example, if you are running IP over frame relay and you set the MTU parameter to 1506, the router reduces this value to 1439.

WEP and WCP are dynamically configurable for each frame relay virtual circuit. Therefore, regardless of whether you configure these protocols, the router subtracts the WEP and WCP headers from the MTU.

When you configure WEP or WCP, the router automatically accounts for the WEP and WCP headers, resulting in a maximum packet size that is equal to the configured MTU.

If you do not configure WEP or WCP for frame relay, enter an MTU value that is larger than necessary to account for the router's adjustments. For example, if you are running IP over frame relay and you want the MTU to be 1600, enter a value of 1667.

For more information about the MTU parameter, see *Configuring WAN Lines Services*.

Using Technician Interface Software

The following sections are amendments to *Using Technician Interface Software*.

Monitoring EIA Signals

You can monitor Electronic Industries Association (EIA) signals on the serial ports of Bay Networks AN®, ARN™, ASN™, and BN® routers. You can monitor request to send (RTS), clear to send (CTS), data send ready (DSR), data terminal ready (DTR), and data carrier detect (DCD) signals on any serial port including RS-232-C, RS-422, and V.35 interfaces.

Note: Only the true status of the EIA signals at the serial port are monitored. The signals displayed are not interpreted based on the cable type. For cable types other than straight-through, such as crossover cables, you must interpret the signals.

You monitor EIA signals using the **show** command of the Technician Interface. See *Using Technician Interface Software* for more information.

Using the Technician Interface

Use the Technician Interface command **show sync eia_status** to monitor EIA signals on a specific serial port. An active signal is displayed as “H,” an inactive signal is displayed as “L.”

Example

```
[1:1]$ show sync eia_status
Slot   Conn   Circuit RTS    CTS    DSR    DCD    DTR
------ ------ ------  ------ ------ ------ ------ ------
1      2      S11     H      L      L      H      L
1 entry(s) found
```

Configuring and Managing Routers with Site Manager

The following sections are amendments to *Configuring and Managing Routers with Site Manager.*

Configuring and Monitoring Syslog Using the BCC

This section provides information about:

- Syslog services on a Bay Networks router
- Syslog daemon (*syslogd*) services on a UNIX workstation
- How to configure *syslogd* on a UNIX workstation
- Procedures for configuring and managing Syslog services on a router
- BCC **show** commands for monitoring Syslog statistics and runtime information
- Syslog configuration parameters

Overview of the Syslog Service

You can use the BayRS Syslog messaging service to capture and process router event messages on any UNIX-based network management platform. The Syslog component of the router software supports this functionality by communicating with a counterpart software component named *syslogd* on your management workstation.

Syslogd is the UNIX daemon that receives and locally logs, displays, prints, and forwards messages that originate from local and external sources.

Figure 7 illustrates Syslog and *syslogd* functions.

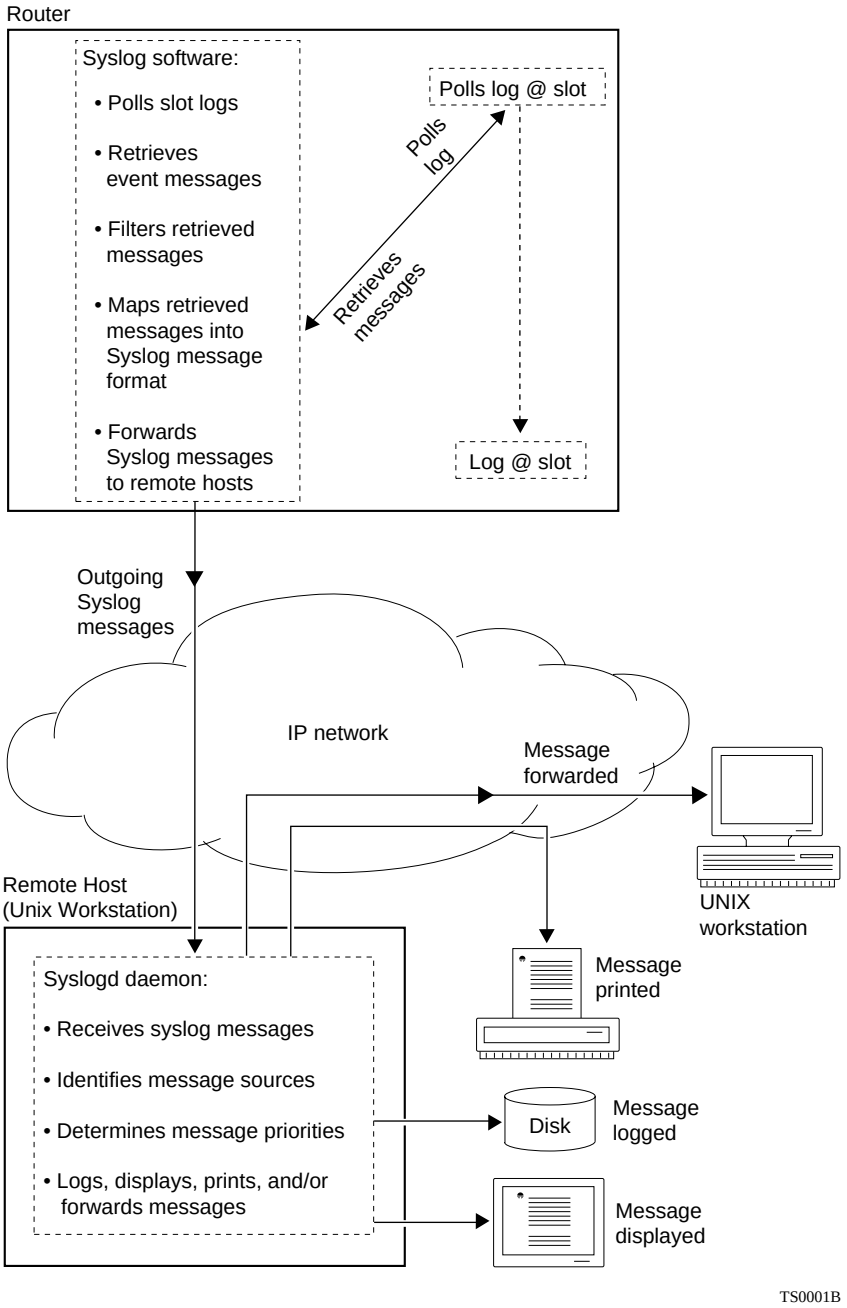


Figure 7. Syslog and *syslogd* Operations

Syslog running on each slot:

- Polls the local events log buffer to retrieve new event messages
- Selects from the local events log messages that meet the requirements of entity filters that you configure on the router
- Maps into Syslog message format any messages retrieved from the local events log
- Inserts a priority code into each reformatted message
- Orders messages chronologically, if you first enabled the message sequencing feature
- Forwards messages to IP on the router, which in turn forwards messages to remote hosts identified in the Syslog host table

At a remote UNIX management workstation, *syslogd*:

- Receives Syslog messages from Bay Networks routers
- Examines the priority code in each message
- Determines the system handling for each message
- Dispatches each message to any or all of the following destinations:
  - -- Workstation display
  - -- Local log file
  - -- Designated printer
  - -- One or more remote hosts

Remote Hosts and Filters

Through the Syslog service, you use a management workstation (typically, a remote UNIX host) to monitor event messages generated by the software entities on each router in your network. You configure *entity filters* on each router to capture and forward to that host only messages that you specify.

You can filter event messages by:

- Entity name
- Event number
- Event severity level
- Device slot number

Figure 8 illustrates how an entity filter limits the number of event messages forwarded by Syslog from a router to a specific remote host.

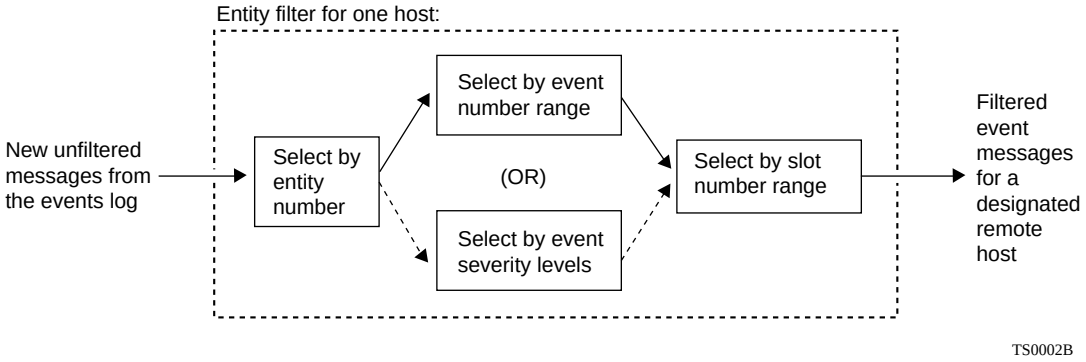

Entity filter for one host:
New unfiltered messages from the events log
Select by entity number
Select by event number range
(OR)
Select by event severity levels
Select by slot number range
Filtered event messages for a designated remote host
TS0002B

Figure 8. Router Event Message Filtering for One Host

Entity Filters

Each protocol and system service in the router software has a unique entity name. Each event message contains the name of the entity that originated (logged) that message. For a complete list of BayRS entity names and their corresponding internal entity numbers, refer to the BayRS documentation CD, or access the event message database at:

http://support.baynetworks.com/library/tpubs/events

You can configure an individual entity filter to do one of the following:

- Capture from one entity all messages that fall within the numbered range of events you specify.
- Capture from all entities event messages logged with the severity levels that you specify.

Syslog forwards all captured events to the hosts identified in the BCC Syslog configuration.

Filtering by Entity Name

When you create an entity filter, you must specify the router entity associated with events you want to capture. For example, if you create a filter for the entity *ip*, that filter captures only messages logged by IP on the router. Syslog forwards IP event messages to the remote host associated with the filter.

If you want Syslog to capture and forward event messages from all entities, create a wildcard filter, specifying the entity name "all."

Note: Whenever you create a filter using any entity name other than "all," that filter takes precedence over the wildcard filter associated with the same remote host. (The wildcard filter transitions to the disabled state.)

Filtering by Event Number

Each event message generated by a router entity has a unique number. You can create an entity filter that captures only messages that fall within an event number range that you specify using the following **filter** parameters:

- event-lower-bound
- event-upper-bound

Syslog includes the upper and lower boundary values as part of this range.

For example, an entity filter for FTP has an event number range with a lower boundary of 5 and an upper boundary of 27. With this filter, Syslog captures and forwards to a remote host all FTP log messages with event numbers 5 to 27.

Syslog can capture and forward an individual message if you create a filter with the event upper and lower boundary numbers set to the same value.

If you configure an event number range of 0 to 255, Syslog ignores the range as a filtering parameter and instead captures messages that match the criteria of the filter's message severity mask.

Filtering by Event Severity Level

Each event message generated by the router software has one of the following severity levels:

- Fault
- Warning
- Information
- Trace
- Debug

You can create an entity filter to capture only event messages that have the severity levels you specify. To create this type of filter, you must configure a:

- filter *name*
- *entity* name
- *event-lower-bound* = 0
- *event-upper-bound* = 255 (the wildcard event number)
- *severity-mask* = any or all of the following: fault, warning, info, trace, debug

For example, if you create an entity filter for FTP with a message severity-mask value of **{warning fault info}**, that filter captures only FTP event messages with a severity level of warning, fault, or information.

Note: Syslog checks the message severity mask only when you accept the default event message number range of 0 to 255. This causes Syslog to ignore event numbers as criteria for capturing and forwarding messages to a remote host.

Filtering by Slot Number

The router stores event messages in the log buffer associated with each slot. You can create an entity filter that captures only event messages logged on the slots you specify. To define a range of slot numbers for an entity filter, you specify values for the following **filter** parameters:

- *slot-lower-bound*
- *slot-upper-bound*

Syslog includes the upper and lower boundary numbers as part of the range. You must specify at least one slot in the range 1 to 14, where the slot numbers depend on the model of router.

Note: Since the slot-lower-bound and slot-upper-bound parameters each have a default value of 0, you must enter a valid, nonzero slot range or the filter will not transition to the enabled state.

For example, you can configure an entity filter for FTP with an event number range of 5 to 27 and a slot number range of 2 to 5. In this case, Syslog forwards to the remote host associated with this filter FTP log messages numbered 5 to 27 logged on slots 2 to 5 only.

You can configure a filter to select messages logged on a specific slot by setting the upper and lower slot boundary values to the same number.

Mapping Router Event Messages into Syslog Message Format

Syslog running on each slot maps filtered event messages into Syslog message format. For example, the following system log message

```
#1: 02/07/95 16:03:18.679 INFO SLOT2  FTP  Code:5
FTP is initializing.
```

looks as follows in Syslog format:

```
<AE>FTP: SLOT:2 SEVERITY:Info ENTITY_CODE/EVENT_CODE:88/5
FTP is initializing.
```

Figure 9 shows how Syslog encapsulates a message into a UDP packet.

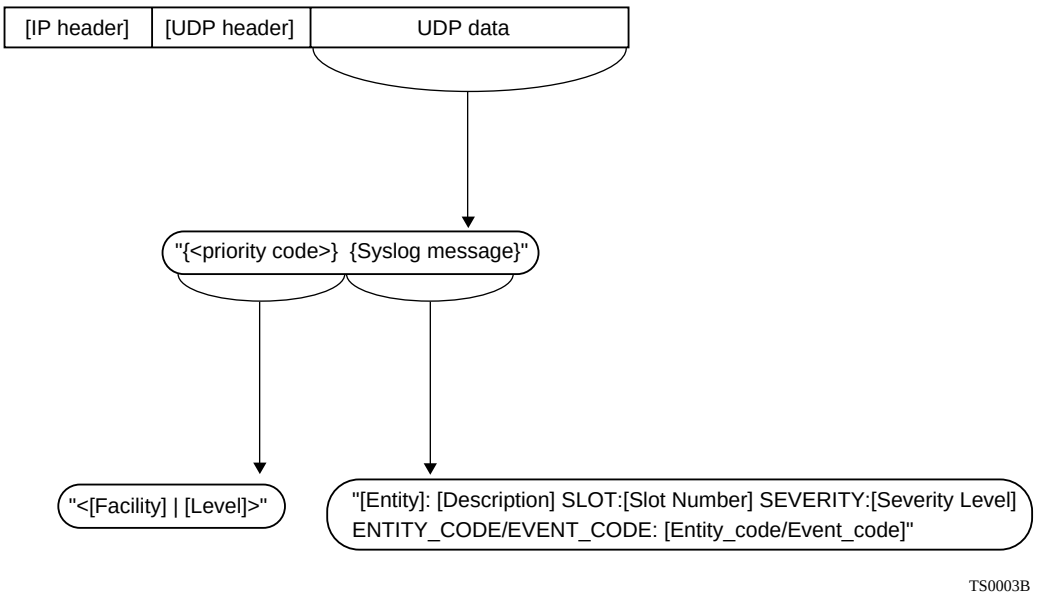


Figure 9. Syslog Message Encapsulation

The following paragraphs describe the purpose of each field in a Syslog packet shown in Figure 9.

IP Header -- Syslog adds to any event message that matches all filtering criteria the destination IP address for a specific remote host.

UDP Header -- Syslog adds to any event message that matches all filtering criteria the destination UDP port number on the remote host identified in the IP header.

UDP Data -- The UDP data field in the Syslog packet contains a reformatted router event message, plus a priority code required by the remote host. The remote host uses this information to decide how to handle messages received from a router.

Priority Code -- A priority code and its text (see Figure 10) consist of a facility code plus an error-level code in the form *facility.error.*

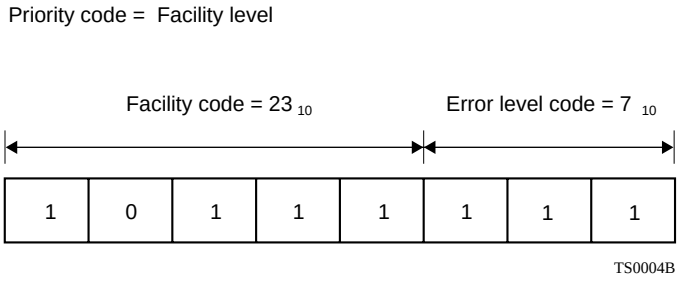


Figure 10. Syslog Message Composition

Facility Codes

The facility code identifies a standard UNIX system facility that receives a message from an internal or external software entity. The “Local <0-7>” UNIX system facilities receive event messages (in Syslog format) from routers in the network. The following table relates UNIX system facility names to their respective facility codes on a workstation.

UNIX System Facility Name	Facility Code (equivalent decimal value)
Local 0	1
Local 1	2
Local 2	3
Local 3	4
Local 4	5
Local 5	6
Local 6	7
Local 7	8

Mapping Error Message Severity Levels

The error-level code identifies the level of urgency of a received message for UNIX system-handling decisions. The following table shows one way to map UNIX system error codes and error levels to the severity levels of event messages from a Bay Networks router.

UNIX System Error Codes	UNIX System Error Levels	Bay Networks Router Event Message Severity Levels
1	LOG_EMERG	Fault
2	LOG_ALERT	Warning
3	LOG_CRIT	Warning
4	LOG_ERR	Warning
5	LOG_WARNING	Warning
6	LOG_NOTICE	Info
7	LOG_INFO	Info
8	LOG_DEBUG	Debug, Trace

You determine how the severity levels of Bay Networks router event messages map to error levels on your UNIX workstation, based on the requirements of the network management application you use.

For instructions on how to map router event messages to UNIX system error level codes, see "Mapping Router Message Severity Levels to UNIX System Error Levels" on page -81.

Sequenced Messaging

The Syslog time-sequencing feature captures and forwards in timestamped order all event messages captured by entity filters on the router.

With time-sequencing disabled, Syslog forwards event messages to the remote hosts according to the order of slots polled on the router.

For instructions on how to enable the time-sequencing feature, see "Enabling Sequential Syslog Messaging" on page -83.

Note: Enable time sequencing only when it is important for your management workstation to receive router event messages in timestamped order. When you enable the time-sequencing feature, Syslog requires more processing resources from the router.

Configuring *syslogd* on a UNIX Workstation

Before you configure and activate Syslog on any routers, configure *syslogd* on UNIX network management workstations in your network. This helps to prevent the loss of event messages you may want to capture as you begin to enable Syslog on each router.

Configuring syslog.conf

UNIX workstations have a *syslog.conf* file in which you define destinations for event messages received by the local *syslogd* software module. For *syslogd* to properly dispatch router event messages to a file, display, printer, or another remote host, you must edit the contents of the */etc/syslog.conf* file.

Configure *syslogd* on your UNIX workstation, as follows:

1. **Log in as superuser:**

   su root

2. **Open** */etc/syslog.conf* **and examine the** <*facility.level*> **indicators,** **local**<*0 - 7*>**.**<*fault* | *warning* | *info* | *trace* | *debug*>**.**

3. **Edit** */etc/syslog.conf* **as needed to achieve message handling appropriate for your management workstation requirements.**

   See the examples on page -69.

4. **Save the changes you made to** *syslog.conf***.**

5. **Obtain the process ID for the** *syslogd* **process currently running on the workstation by entering:**

   ps

6. **Reinitialize** *syslogd* **by entering:**

   kill -HUP *<process_id>*

Viewing Event Messages from a Network Device

To view on a UNIX workstation event messages from a Bay Networks router, open the file you designated on the workstation to receive Syslog messages from routers in your network.

Example:

Messages dispatched to console display:

local7.debug [TAB]	/dev/console
local7.info [TAB]	/dev/console
local7.notice [TAB]	/dev/console
local7.err [TAB]	/dev/console
local7.crit [TAB]	/dev/console
local7.alert [TAB]	/dev/console
local7.emerg [TAB]	/dev/console

or:

local7.debug;local7.info;local;local7.notice;
local7.err;local7.crit;local7.alert;local7.emerg /dev/console

Messages dispatched to a file:

local7.info [TAB]	/var/log/syslog.file
local7.debug [TAB]	/dev/log/debug_file
local7.warning [TAB]	/var/log/warning_file

Messages dispatched to a host:

local7.notice [TAB]	*@<host_name>*

Messages dispatched to a printer:

local7.trace [TAB]	*@<printer_name>*

The example shows that you press the [Tab] key to access the path designation for each “Messages dispatched” entry.

For More UNIX Syslog Information

See the instructions provided in the UNIX manual (man) pages on your network management workstation for more information about Syslog, *syslogd*, and *syslog.conf*.

Starting Syslog on the Router

The following steps describe how to configure Syslog on a router:

1. **Using the console attached to the router, or using a telnet connection to the router, log on to the Technician Interface.**
2. **Start the BCC and enter configuration mode.**
3. **Configure the Syslog global entity.**
4. **Configure a remote host to receive Syslog messages from the router.**
5. **Configure entity filters for the new remote host.**
6. **To add more hosts and filters, repeat steps 4 and 5. Otherwise, continue with step 7.**
7. **Enable system auditing (box; access; audit state enabled).**
8. **Save your new router configuration to a file.**
9. **Exit your BCC session.**

Figure 11 shows the BCC configuration hierarchy for Syslog services on the router.

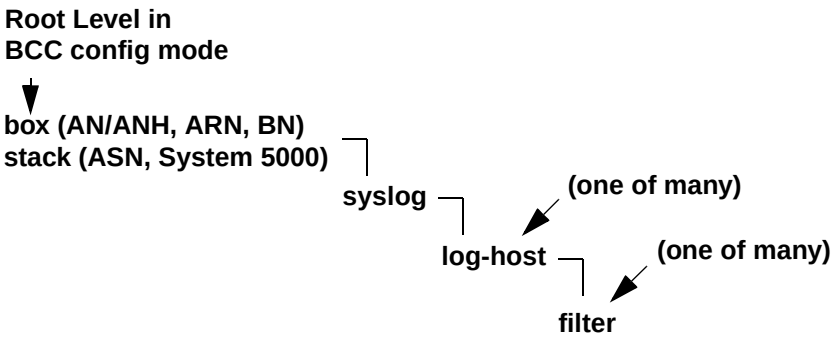


Figure 11. BCC Configuration Hierarchy for Syslog Services

The sections following describe the Syslog configuration sequence in greater detail.

Starting the BCC

To start the BCC interface, log in to the Technician Interface and enter the **bcc** command at the prompt:

```
Router1> bcc

     Welcome to the Bay Command Console!

     * To enter configuration mode, type config

     * To list all system commands, type ?

     * To exit the BCC, type exit


bcc>
```

If you need more information about how to log on to a Bay Networks router, see *Using Technician Interface Software*.

To enter BCC configuration mode, enter:

```
bcc> config
Reading configuration information, please wait . . . done.
box#
```

On AN®, ANH™, ARN™, and BN® routers, the BCC interface returns the root level prompt, `box#`, upon entering configuration mode. For ASN and System 5000™ routers, the root-level prompt in configuration mode is `stack#`.

Adding Syslog to the Router Configuration

To add Syslog services globally to the router configuration, enter:

```
box# syslog
syslog#
```

To enable Syslog services, you must configure at least one host to receive Syslog messages from the router, and at least one entity filter to capture messages for that host.

Identifying a UNIX Host to Receive Router Syslog Messages

You must define which remote hosts you want to receive Syslog (event) messages from the router. To define a host, navigate to the **syslog** context and enter:

log-host address *<IP_address>*

IP_address is the address of the remote host you want to receive Syslog messages.

For example, to point the Syslog service to the remote host at IP address 192.168.3.4, enter:

```
box# syslog
syslog# log-host address 192.168.3.4
log-host/192.168.3.4#
```

The BCC enters the configuration context of the new **log-host** object. From this context, you can add more hosts to the router configuration by entering the **log-host** command, each time with a new IP address.

You can point the Syslog service to additional remote hosts, up to the value configured for the Syslog *maximum-hosts* parameter. To increase or decrease the maximum number of hosts, refer to "Defining the Maximum Number of Remote Hosts" on page -82.

Creating an Entity Filter for a Remote Host

After you define a remote host, you must configure at least one entity filter for it. Syslog messaging to that host cannot begin until you create this filter.

To create a filter for a remote host, navigate to the **log-host** context and enter:

filter name *<filter_name>* **entity** *<entity_name>*

filter_name is any name you want to assign to this filter.

entity_name is one of the BCC legal values for the filter *entity* parameter.

Example:

```
box# syslog
syslog# log-host address 192.168.3.7
log-host/192.168.3.4# filter name telnet-sessions entity telnet
filter/192.168.3.4/telnet-sessions#
```

You can configure up to 10 filters per remote host, without changing configuration context. For each new filter, reenter the **filter** command with a new name and any legal value for the required *entity* parameter. To see a list of entity names you can use, enter the following command:

```
log-host/192.168.3.7# filter name test entity ?
Legal values:
ace           ahb           all           aot           appn
arp           asr           async         at            atm
atm_dxi       atm_le        atm_sig       atmintf       bgp3
bgp4          bgp           bisync        bod           boot
 . . .         . . .         . . .         . . .         . . .
 . . .         . . .         . . .         . . .         . . .
 . . .         . . .         . . .         . . .         . . .
tcp           telnet        tf            tftp          ti
ti_rui        tnc           token         topology      tty
vst           wcp           wep           x25           x25pad
xctl             xmodem           xns
```

This example assigns the value “test” to the name parameter, and queries for the value of the entity parameter. The BCC does not have enough information to configure this filter, but you get from the list enough information to complete a filter configuration command. Filter names must be unique for each host.

After creating a filter, you need to identify the event numbers, event severity levels, and/or slots you want to use as filtering criteria. Go to the following sections for that information:

- “Filtering Messages by Event Number” on page -73.
- “Filtering Messages by Event Severity Level” on page -74.
- “Filtering Messages by Slot Number” on page -75.

Filtering Messages by Event Number

After you create an entity filter for a host, you can configure one of the following:

- An event number (or range) and a slot number (or range)
- A severity mask and a slot number (or range)

Note: The filter remains inactive until you define the event and slot numbers, or the severity mask and slot numbers.

To define by message number the events you want Syslog to capture and forward to a remote host, configure values for the *event-lower-bound* and *event-upper-bound* parameters. Navigate to the appropriate entity filter and enter:

event-lower-bound *<event_number>*

event-upper-bound *<event_number>*

event_number is the lowest-numbered event or the highest-numbered event in the range of events you want Syslog to capture.

Example:

```
box# syslog
syslog# log-host/192.168.125.3
log-host/192.168.3.4# filter name telnet-sessions entity telnet
filter/192.168.3.4/telnet-sessions# event-lower-bound 1
filter/192.168.3.4/telnet-sessions# event-upper-bound 52
filter/192.168.3.4/telnet-sessions#
```

To filter a single event, specify the same event number for the *event-lower-bound* and *event-upper-bound* parameters.

If you do not want to define filtering by event numbers, accept the default values for *event-lower-bound* (0) and *event-upper-bound* number (255). Then configure the severity levels of events you want to capture for the remote host associated with this filter.

Accepting the default values for the *event-lower-bound* and *event-upper-bound* parameters causes Syslog to use only the severity and slot mask criteria for capturing and forwarding messages.

Filtering Messages by Event Severity Level

The BCC configures each filter by default to capture messages with an event number range of 0 to 255. If you define an event range other than 0 to 255 for the current filter, Syslog ignores the severity mask as a message filtering criterion.

To set the severity levels of only those event messages you want Syslog to capture and forward to a remote host, navigate to the appropriate filter context and enter:

severity-mask {[**fault**][**warning**][**info**][**trace**][**debug**][**none**][**all**]**}**

Example:

```
filter/192.168.3.4/telnet-sessions# severity-mask {fault warning info}
```

Note: To specify multiple severity levels (other than “all”) concurrently, you must enclose these values within braces {...} on the command line, and you must insert a space after each value except the last one preceding the closing brace. To specify all severity levels, enter **severity-mask all**. To specify no severity levels, enter **severity-mask none**. Do not enclose the values **all** or **none** within braces.

Filtering Messages by Slot Number

To determine by slot numbers the event messages you want Syslog to capture and forward to a host, navigate to the appropriate filter context and enter:

slot-lower-bound *<slot_number>*

slot-upper-bound *<slot_number>*

slot_number is the lowest-numbered slot or the highest-numbered slot in the range of slots on which you want Syslog to capture event messages.

Example:

```
box# syslog
syslog# log-host/192.168.125.3
log-host/192.168.3.4# filter name telnet-sessions entity telnet
filter/192.168.3.4/telnet-sessions# slot-lower-bound 3
filter/192.168.3.4/telnet-sessions# slot-upper-bound 5
filter/192.168.3.4/telnet-sessions#
```

Note: Although the valid range for the slot lower and upper boundaries is 0 to 14, specify only values within the range of actual slot numbers for the router model you are configuring. Otherwise, the filter will not become active.

Saving a Syslog Configuration

You can save your configuration as a bootable (binary) file on an NVFS volume by entering:

save config *<vol>*:*<filename>*

You can also save the configuration as an ASCII text file, which you can import into the active router configuration. To save the configuration as an ASCII file, enter:

show config -all -file <*vol*:>:<*filename*>

To import into the active configuration a file created by the **show config -all -file** command, enter:

source *<vol>*:<*filename*>

Managing Syslog Services

Once you finish configuring Syslog on a router, you may occasionally need to:

- Stop or restart Syslog message forwarding to all remote hosts.
- Stop or restart Syslog message forwarding to a specific remote host.
- Disable or reenable a specific entity filter.
- Delete a remote host from the Syslog configuration.
- Delete an entity filter associated with a specific remote host.
- Delete Syslog services from the router.

Stopping or Restarting Syslog Messaging to All Hosts

You can stop Syslog messaging to all remote hosts by disabling Syslog services. Navigate to the **syslog** context and enter:

disable

Example:

```
box# syslog
syslog# disable
```

To confirm the change, check the current value of the *state* parameter by entering:

```
syslog# state
 state disabled
```

To restart Syslog messaging to all remote hosts, navigate to the **syslog** context and enter:

enable

Example:

```
box# syslog
syslog# enable
```

To confirm the change, check the current value of the *state* parameter by entering:

```
syslog# state
 state enabled
```

Stopping or Restarting Syslog Messaging to one Host

You can stop Syslog messaging to a specific host by disabling that host entry in the router configuration. Navigate to the appropriate **log-host** context and enter:

disable

Example:

```
box# syslog
syslog# log-host 192.168.3.4
log-host/192.168.3.4# disable
```

To confirm the change, check the current value of the *state* parameter by entering:

```
log-host/192.168.125.3# state
 state disabled
```

To restart Syslog messaging, navigate to the appropriate **log-host** context and enter:

enable

Example:

```
box# syslog
syslog# log-host 192.168.3.4
log-host/192.168.3.4# enable
```

To confirm the change, check the current value of the *state* parameter by entering:

```
log-host/192.168.3.4# state
 state enabled
```

Disabling or Reenabling a Filter

You can stop an entity filter from capturing event messages for its associated remote host. Navigate in configuration mode to the context of the appropriate **filter** object and enter:

disable

Example:

```
box# syslog
syslog# log-host 192.168.3.4
log-host/192.168.3.4# filter/192.168.3.4/telnet-sessions
filter/192.168.3.4/telnet-sessions# disable
```

To confirm the change, check the current value of the filter *state* parameter by entering:

```
filter/192.168.3.4/telnet-sessions# state
 state disabled
```

To restart Syslog messaging by a specific entity filter, navigate to that filter and enter:

enable

Example:

```
box# syslog
syslog# log-host 192.168.3.4
log-host/192.168.3.4# filter/192.168.3.4/telnet-sessions
filter/192.168.3.4/telnet-sessions# enable
```

To confirm the change, check the current value of the filter *state* parameter by entering:

```
filter/192.168.125.3/telnet-sessions# state
 state enabled
```

Deleting an Entity Filter from a Configured Host

To delete an entity filter from a configured host, navigate to the appropriate **filter** context and enter:

delete

Example:

```
box# syslog
syslog# log-host/192.168.3.4
log-host/192.168.3.4# filter/192.168.3.4/telnet-sessions
filter/192.168.3.4/telnet-sessions# delete
log-host/192.168.3.4#
```

Notice that the BCC prompt returns to the configuration context of the remote host associated with the filter.

Deleting a Configured Host and its Filters

To delete a specific **log-host** entry from the Syslog configuration, navigate to the appropriate **log-host** context and enter:

delete

Example:

```
log-host/192.168.3.4# delete
syslog#
```

Notice that the BCC prompt returns to the **syslog** configuration context. Deleting a log-host automatically deletes all entity filters configured for that host.

Deleting Syslog Services from the Router

To delete all Syslog services from the router, navigate to the **syslog** context and enter:

delete

Example:

```
box# syslog
syslog# delete
box#
```

Notice that the BCC prompt returns to root level, `box#` or `stack#`, depending on the device.

Customizing Syslog Operation

Many Syslog service parameters already have suitable default values. Depending on your specific requirements, you may want to customize settings associated with the following tasks:

- Mapping router event message severity levels to remote host (UNIX) system error levels
- Configuring the maximum number of remote Syslog hosts known to the router
- Defining the interval between polling cycles
- Configuring the system facility used by a specific UNIX host to receive and process Syslog messages from the router
- Enabling sequential Syslog messaging

Mapping Router Message Severity Levels to UNIX System Error Levels

In most cases, you can accept the default mapping between router event severity levels and UNIX system error levels established for a specific filter. However, you can customize these mappings by entering new values for the following parameters of any Syslog entity filter:

- *fault-map*
- *warning-map*
- *info-map*
- *trace-map*
- *debug-map*

To change the mapping between router event severity and remote host system error levels, navigate to the appropriate filter context and enter:

{fault-map}|{warning-map}|{info-map}|{trace-map}|{debug-map} *<host_error_level>*

host_error_level is one of the following UNIX system error levels: emergency, alert, critical, error, warning, notice, info, or debug.

Example:

```
filter/192.168.3.4/telnet-sessions# warning-map warning
filter/192.168.3.4/telnet-sessions# info-map notice
filter/192.168.3.4/telnet-sessions# fault-map warning
filter/192.168.3.4/telnet-sessions# debug-map debug
filter/192.168.3.4/telnet-sessions#
```

Defining the Maximum Number of Remote Hosts

You can accept the default maximum number of remote hosts configurable on a device (5), or you can navigate to the router's **syslog** context and enter:

maximum-hosts *<maximum_hosts>*

Example:

```
box# syslog
syslog# maximum-hosts 3
```

Defining the Time Between Polling Cycles

Syslog polls the events log buffer on each slot to retrieve any new messages logged since the previous polling attempt. Syslog determines this interval by the value of its *log-poll-timer* parameter.

You can accept the default 5-second interval that Syslog waits to reinitiate a polling cycle across all slots, or you can navigate to the **syslog** context and enter:

log-poll-timer *<seconds>*

Example:

```
box# syslog
syslog# log-poll-timer 7
```

Identifying a UNIX System Facility

The value of the *log-facility* parameter of any configured log-host determines which UNIX system facility (local0 through local7) receives Syslog messages from the device. You can accept the default setting (local7), or you can navigate to the context of the desired **log-host** object and enter:

log-facility *<system_facility>*

Example:

```
box# syslog
syslog# log-host/192.168.3.4
log-host/192.168.3.4# log-facility local4
```

Legal values for the *log-facility* parameter are local0 through local7.

Enabling Sequential Syslog Messaging

Message time-sequencing allows Syslog to capture and forward router event messages in chronological order. Disabling this feature causes Syslog messages to be forwarded according to the polled sequence of slots. (In either case, the UDP transport may disrupt the sequence of messages received by the host.)

This feature is disabled by default, but you can enable Syslog message sequencing for a specific host. To enable Syslog message sequencing, navigate to the context of the desired **log-host** object and enter:

time-sequence enabled

Example:

```
box# syslog
syslog# log-host/192.168.125.3
log-host/192.168.125.3# time-sequence enabled
log-host/192.168.125.3#
```

Syslog show Commands

This section describes how to use the BCC **show** command to obtain Syslog statistical data from the management information base (MIB). The type and amount of data displayed depend on the specific BCC syntax you enter in each **show syslog** command. This section describes the following **show** commands:

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show syslog base	-84
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show syslog base

The **show syslog base** command displays statistics of the Syslog global entity. This command has no optional filters (flags).

The output of **show syslog base** includes the following information:

State	The configured state of the Syslog service
Maximum Active Hosts	The maximum number of remote Syslog hosts configured to receive messages from this device
Poll Iteration Timer	The number of seconds that Syslog waits to reinitiate a polling cycle across all slots
Operational State	The actual state of the Syslog service (up/down)
# Active Seq. Hosts	The number of hosts receiving time-sequenced Syslog messages from the router
# Active Non-seq. Hosts	The number of hosts receiving Syslog messages on a slot-by-slot basis from the router
# Messages Sent	The total number of Syslog messages forwarded to all remote Syslog hosts configured on this device

show syslog log-host

The **show syslog log-host** command displays statistics associated with any Syslog log-host object configured on the device.

This command supports the following command filters (flags) and filter arguments:

-log-host *<IP_address>*]	Displays statistics for all Syslog hosts configured on this device. By adding an IP address, the command displays the statistics of a specific Syslog host.
-active	Displays the list of remote hosts configured and actively receiving Syslog messages from this router.
-inactive	Displays the list of remote hosts configured but not receiving Syslog messages from this router.
-enabled	Displays **log-host** objects that have a configured state of enabled.
-disabled	Displays **log-host** objects that have a configured state of disabled.

The output of the **show syslog log-host** command includes the following information:

Host IP Address	The address of a remote Syslog host.
Configured State	The administrative state of a configured **log-host** object.
Operational State	The actual (active/inactive) state of a configured **log-host** object. Active means that the associated host is actively receiving Syslog messages from the router. Inactive means that the host is not receiving Syslog messages from the router.
Time Sequencing	Indicates whether Syslog message time-sequencing has been enabled or disabled for the associated remote host.
UDP Port	The UDP port where the remote host receives Syslog messages from the router.
Facility Code	The system facility that the remote UNIX host uses to receive and process Syslog messages from the router
# Messages Sent	The total number of messages sent to the remote host

show syslog filter

The **show syslog filter** command displays statistics of entity filters configured on the router.

This command supports the following command filters (flags) and filter arguments:

-log-host *<IP_address>*]	Displays all filters configured for this remote host.
-name *<log_host_name>*	Displays the filter with this name
-entity *<entity_name>*	Displays filters configured for this entity
-active	Displays filters in the active operational state
-inactive	Displays filters in the inactive operational state
-enabled	Displays filters with a configured state of enabled
-disabled	Displays filters with a configured state of disabled

The output of the **show syslog filter** command includes the following information:

Host IP Address	The IP address of the remote host
Filter Name	The name assigned to the filter
Entity Name	The entity associated with the filter
Configured State	The administrative state of the filter
Operational State	The actual (active/inactive) state of the filter

Syslog Parameter Descriptions

This section describes parameters for the following BCC configurable objects:

- **syslog**
- **log-host**
- **filter**

Table 2. Syslog Parameters (box or stack > syslog)

Parameter	Function
log-poll-timer	Specifies the amount of time in seconds that Syslog waits before initiating another cycle to poll all slots for event messages logged since the previous polling cycle.
maximum-hosts	Specifies the maximum number of remote hosts you can configure to receive messages from the Syslog service on the router.
state	Specifies the administrative state of the Syslog service on the router (enabled or disabled). Before the Syslog service can actually begin filtering and forwarding messages, you must configure at least one remote Syslog host and at least one entity filter for that host.

Table 3. Parameters of log-host (box or stack > syslog > log-host)

Parameter	Function
address	REQUIRED -- Specifies the IP address of this remote host.
log-facility	Specifies the system facility (local0 through local7) used by this remote host to receive Syslog messages from the router.
state	Enables or disables message forwarding to this host from the Syslog service.

(continued)

Table 3. Parameters of log-host (box or stack > syslog > log-host) *(continued)*

Parameter	Function
address	REQUIRED -- Specifies the IP address of this remote host.
time-sequence	Enables or disables time-sequencing and forwarding of Syslog messages. Enabling this feature allows Syslog messages from different slots (router-wide) to be interleaved and forwarded sequentially. Disabling this feature causes Syslog messages to be forwarded according to the polled sequence of slots. (In both cases, the inherent unreliability of the UDP transport may disrupt the sequence of messages received by the host.)
udp-port	Specifies the UDP port of this host.

Table 4. Parameters of filter (box or stack > syslog > log-host > filter)

Parameter	Function
debug-map	Maps router debug messages to an equivalent, host system error level (emergency, alert, critical, error, warning, notice, information, or debug. Default value recommended.)
entity	REQUIRED -- Specifies the router entity logging messages that Syslog will capture and forward to this filter's host.
event-lower-bound	Specifies the lowest-numbered event in the range of events that Syslog will capture and forward to this filter's host. If you do not want to filter by event code, accept the default values for the *event-lower-bound* and *event-upper-bound* parameters. (This configures the wildcard event range value of 0 to 255.) By accepting the wildcard range, Syslog ignores the *event-lower-bound* and *event-upper-bound* parameters and checks for filtering criteria based only on the value of the severity mask.
event-upper-bound	Specifies the highest-numbered event in the range of events that Syslog will capture and forward to this filter's host. If you do not want to filter by event code, accept the default values for the *event-lower-bound* and *event-upper-bound* parameters. (This configures the wildcard event range value of 0 to 255.) By accepting the wildcard range, Syslog ignores this parameter and checks for filtering criteria based only on the value of the severity mask.
fault-map	Maps router fault messages to an equivalent, host system error level (emergency, alert, critical, error, warning, notice, information, or debug. Default value recommended.)
info-map	Maps router info messages to an equivalent, host system error level (emergency, alert, critical, error, warning, notice, information, or debug. Default value recommended.)
name	REQUIRED -- Specifies a unique alphanumeric name for this filter.

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Table 4. Parameters of filter (box or stack > syslog > log-host > filter) *(continued)*

Parameter	Function
severity-mask	Specifies the severity levels of router event messages -- warning, information, trace, fault, and debug -- that Syslog will capture and forward to this filter's host. Syslog uses this severity mask only if you specify the wildcard event number range (0 to 255) as values for the *event-lower-bound* and *event-upper-bound* parameters. If you specify a range of event numbers other than the wildcard range, Syslog ignores the *severity-mask* parameter.
slot-lower-bound	Specifies the lowest-numbered slot in the range of slots on which Syslog will capture and forward event messages to this filter's host.
slot-upper-bound	Specifies the highest-numbered slot in the range of slots on which Syslog will capture and forward event messages to this filter's host.
state	Specifies the administrative state of this filter (enabled or disabled).
trace-map	Maps router trace messages to an equivalent, host system error level (emergency, alert, critical, error, warning, notice, information, or debug. Default value recommended.)
warning-map	Maps router warning messages to an equivalent, host system error level (emergency, alert, critical, error, warning, notice, information, or debug. Default value recommended.)

Upgrading Routers to BayRS Version 13.xx

The following section is an amendment to *Upgrading Routers to BayRS Version 13.xx*.

Boot and Diagnostic PROM Upgrades for Version 13.10

Table 5 lists the routers that require a new version of boot and diagnostic PROMs for BayRS Version 13.10. Upgrade the PROMs if the features that you need depend on a PROM version more recent than the version now in your router.

Table 5. Version 13.10 Boot and Diagnostic PROM Revisions

Router Platform	Diagnostic PROM File Name	Diagnostic PROM Revision Number	Reason for Upgrading PROM	Boot PROM File Name	Boot PROM Revision Number
AN/ANH™	*andiag.exe*	v7.34	Strata flash feature support	*anboot.exe*	9.00.d
AN200	*an200diag.exe*	v1.00	Strata flash feature support	*an200boot.exe*	11.01
ARE (BN, 5782 MPE)	*arediag.pcc*	v1.16	Strata flash feature support	*areboot.ppc*	13.00
ARN	*arndiag.exe*	v2.16	E7S feature support	*arnboot.exe*	1.25
ARN	*arn.diag.rom*	v2.16	E7S feature support	Not applicable	Not applicable
ARN	*e7srom.rom*	2.16	E7S feature support	Not applicable	Not applicable
ARN_PBDROM.ROM	*arn_pbdrom.rom*	v1.22	Not applicable	Not applicable	Not applicable
ASN	*asndiag.exe*	v2.34	Strata flash feature support	*asnboot.exe*	13.00
BN	*frediag.exe*	v5.14	Strata flash feature support	*freboot.exe*	13.00
System 5000™ net modules	*s5000diag.exe*	v0.04	Strata flash feature support	*s5000boot.exe*	13.00